novotek
VAKUUMTECHNIK

Catalogue 2017/2018

Contents

Description of individual high-grade steel types

1.4301:
Austenitic stainless steel. Very high cold formability. Easily weldable. High corrosion resistance. Polishable. Highly suited for vacuum applications.

1.4305:
Easy to machine. Lower corrosion resistance than 1.4301. Not weldable. Moderately suitable for vacuum applications.

1.4306, 1.4307:
Low-carbon variant of 1.4301 with similar properties. Highly weldable due to low carbon level, very insusceptible to intergranular corrosion. Highly suited for vacuum applications.

1.4401:
Very high cold formability. Easily weldable. Due to molybdenum additive, more resistant than 1.4301 to non-oxidising acids and chlorine compound, polishable, well suited for vacuum applications.

1.4404:
Significantly less carbon than 1.4401 but with similar properties. Highly weldable due to low carbon level, very insusceptible to intergranular corrosion. Highly suited for vacuum applications.

1.4429:
Similar properties to 1.4435 but higher strength due to higher nitrogen share. The nitrogen share also stabilises the austenitic structure. Highly suited for vacuum applications.

1.4435:
Similar properties to 1.4404. The increased share of molybdenum makes 1.4435 more resistant to non-oxidising acids and media containing chlorine than 1.4404. Highly suited for vacuum applications.

1.4541:
Similar properties to 1.4301 but not polishable. Titan-stabilised, which makes is highly weldable in all dimensions without being susceptible to intergranular corrosion. Well suited for vacuum applications.

1.4571:
Similar properties to 1.4401. Titan-stabilised, which makes is highly weldable in all dimensions without being susceptible to intergranular corrosion. Not polishable. Well suited for vacuum applications.

1.4429 ESR:
Very high homogeneity including purity combined with a high hardness level. Of particular importance is its very low magnetic permeability. Other properties correspond to 1.4429 although highly suitable for vacuum applications.

Aluminium components

3.1645/AlCU4PbMgMn or AlCuMgPbF38
3.1655/AlCu4BiPb 3.3214/AlMg1SiCu
Standard aluminium compositions with novotek components. They can be used for a temperature range from –196 °C to 150 °C and a pressure range of 2.5 bar to 10^{-7}mbar. They are very well suited for static loads.

Aluminium sealing materials and welded parts

3.2315/AlMgSi1
Standard aluminium composition of novotek sealing materials and welded parts. The slightly lower rigidity compared to materials for standard aluminium components makes it perfectly suitable as a sealing material. Furthermore, no permeation of gases takes place. However, these seals can only be used once.

Nickel-plated brass

2.0401/CuZn39Pb3 (MS 58)
Standard turned brass in novotek components. This material is then chem. nickel-plated. This achieves an improved corrosion resistance, hardness, toughness and ductility.

Steel (structural steel)

1.0036-38 (St37-2) 1.0570 or 1.0577 (St52-3)
Standard steel grades for novotek components. They can be welded very easily and can be stress-relieved. Furthermore, they are highly suitable for nickel or zinc coating.

Sealing materials

Elastomer seals are permeable to gas and also emit gases. The gas permeability, or permeation, depends on the material, the type of gas and ambient conditions – mainly the temperature. After an adequate evacuation time, the outward gas stream decreases considerably, which means that a relatively constant permeation gas stream materialises.

Permeation and outgassing are diffusion-dependent. High gas-proofness also means slower outgassing, which means that it takes longer until a constant permeation gas stream is created. This can take up to well over 100 hours. Heating up speeds up this procedure considerably. FPM, for example, has a low gas permeability for air. A final pressure of approx. 10^{-7}mbar is reached in typical cases. The possible final pressure that can be reached is determined by the number of elastomers used. Elastomer seals can be used several times due to their elastic deformation. They require a contact force of a new N/mm^2. Under the following conditions, elastomer seals can age relatively quickly: UV radiation, oxygen, ozone, heat, cold, high temperature variation, moisture, solvents or mechanical loads.

Storage conditions of elastomer seals:
To ensure that their properties are retained as long as possible, we recommend the following ambient conditions during storage:

- little temperature variation
- where possible, temperatures between 10 °C and 25 °C
- storage in light-proof containers
- atmosphere free of chemicals
- air humidity bet. 60% and 70%

Metal seals made of aluminium are suitable for assembly on high-grade steel flanges and can be used in a temperature range from –196 °C to 150 °C. They can only be used once. For assembly, special clamping elements for metal seals that generate significantly higher contact forces can be used.

Metal seals made of copper are suitable for assembly on high-grade steel flanges and can be used in a temperature range from –196 °C to 200 °C. A silver coating increases the maximum temperature to 450 °C. They can only be used once. They are suitable for a pressure range of 1 bar to 10^{-13}mbar. For assembly, special clamping elements for metal seals that generate significantly higher contact forces must be used.

Properties of elastomer seals

Chemical designation	Abbreviation	Trade name	Temperature application range	Properties and application range
Nitrile rubber	NBR	Perbunan® Buna N®	–30 to +110	Increased media resistance to: hydraulics, pneumatics, petroleum, silicone oils and greases, water up to 80 °C and air. Good helium-proofness final pressures up to $1x100^{-6}$mbar
Fluorocarbon rubber	FKM / FPM	Viton®	–20 to +200	Increased media resistance to: mineral oils and grease, aliphatic, aromatic and chlorinated hydrocarbons, petroleum, diesel, acids, alkaline solutions and silicone oils Suitable for high vacuum $1x10^{-7}$mbar Age resistant, good mechanical properties
Ethylene propylene diene monomer rubber	EPDM	Dutral®	–60 to +150	Increased media resistance to: hot water, steam, alcohols, org. and inorganic acids and alkalis, high cold resistance, ageing resistance and ozone resistance, non-mineral oil resistant, final pressures up to $1x10^{-6}$mbar novotek standard • EPDM with peroxide crosslinking • Advantage: high temperature resistance • More durable • No discolouration after contact with metals and other different materials
Chlorobutadiene rubber	CR	Neoprene®	–40 to +110	Increased media resistance to: ammonia, carbon dioxide, silicone oils, remaining properties comparable to NBR final pressures up to $1x10^{-6}$mbar
Silicone rubber	VMQ	Silicone	–60 to +200	Increased media resistance to: hot air, oxygen, inert gases, ozone and UV radiation. Only suitable for static applications! Final pressures up to $1x10^{-5}$mbar
Perfluor rubber	FFKM	Kalrez® Perlast®	–20 to +330	Very high temperature and chemical resistance. FFKM is mainly used in areas where safety standards are extremely high. It unites the chemical properties of PTFE and the mechanical properties of Viton. Final pressures up to $1x10^{-7}$mbar

KF flange components

KF flange components and connecting elements

Description:

KF connections are used in vacuum systems that work with low, medium and high vacuum. These components are manufactured at novotek in accordance with DIN 28403 and ISO 2861 in sizes NW10 to NW50 and are compatible with components from other well-known manufacturers.

All welded parts have been leak-tested using helium and are leak-proof up to 10^{-9}mbarl/s.

The KF connection consists of two symmetrical flanges with a centring ring with O-ring seal and a clamping ring (Fig. 1). The necessary contact pressure for the seal is generated via the conical tightening surfaces at the KF flange and clamping ring. Instead of a clamping ring, collar half shells can also be used.

For the assembly of KF connections on base plates, claws (Fig. 2) are used.

KF connections are suitable for a pressure of 2.5 bar (1.5 bar excess pressure) and pressure of up to 10^{-9}mbar. At a max. pressure of up to 4 bar (3 bar excess pressure), an outer retaining ring in conjunction with a solid clamping ring must be installed.

Please refer to the Materials chapter for operation temperatures, sealing materials and clamping elements.

Design information:

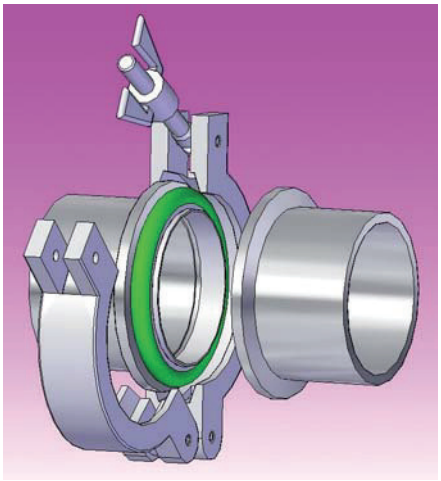


Fig. 1

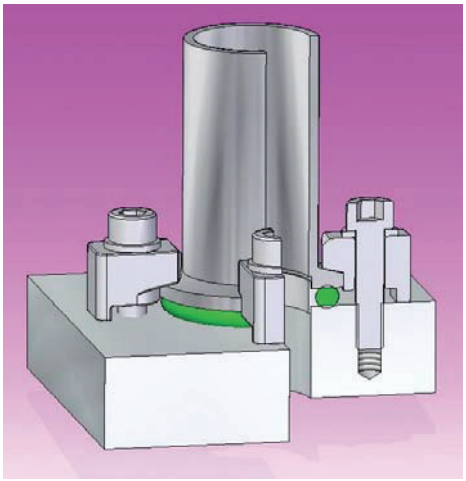
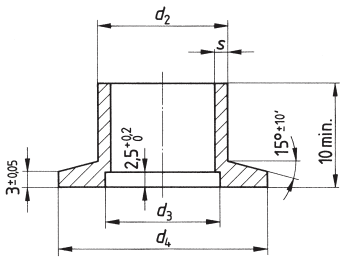


Fig. 2

The KF connections and their components are suitable for vacuum-tight connections. Mechanical loads can only be absorbed to a limited extent. Additional mounts are often necessary if other forces are added to the static or dynamic loads of the vacuum system.

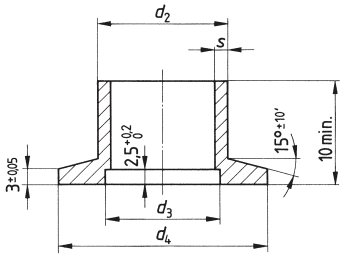
KF flange with flanged socket



Main dimensions in accordance with DIN 28403

Nominal width DN	d_2 [mm]	d_3 [mm]	d_4 [mm]	s [mm]
10	14	12.2	30	2
16	20	17.2	30	2
20	25	22.2	40	2
25	28	26.2	40	2
32	38	34.2	55	2
40	44.5	41.2	55	2
50	57	52.4	75	3.2

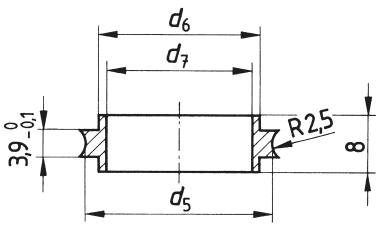
KF flange with flanged socket with imperial pipe



Main dimensions in accordance with DIN 28403

Nominal width DN	d_2 [mm]	d_3 [mm]	d_4 [mm]	s [mm]
10	6.35 (1/4“)	12.2	30	0.91
10	12.7 (1/2“)	12.2	30	1.65
16	19.05 (3/4“)	17.2	30	1.65
25	1“ (25.4)	26.2	40	1.65
40	38.1 (1 1/2“)	41.2	55	1.65
40	44.5 (1 ¾“)	41.2	55	2.0
50	50.8 (2“)	52.4	75	1.65

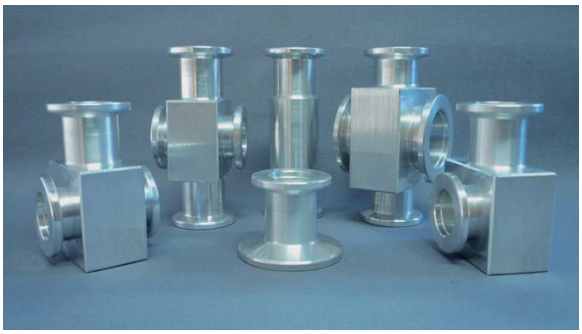
Centring ring



Main dimension in accordance with DIN 28403

Nominal width DN	d_5 [mm]	d_6 / –0.1 [mm]	d_7 [mm]
10	15.3	12	10
16	18.5	17	16
(20)	25.5	22	21
25	28.5	26	25
(32)	40.5	34	32
40	43	41	40
50	55.5	52	50

KF junctions



Properties, aluminium 3.1645:
- high leak rate (<10^{-7}mbarl/s)
- high conductance
- low level of outgassing
- compact structure

Description:
The novotek KF junctions made of aluminium are made of solid material. The criteria for selection of the special aluminum alloy are low vapour pressure, high corrosion resistance and a high level of hardness. The elaborate manufacturing process of these KF components made of solid material has been selected to avoid the porosity associated with cast aluminium. The high level of hardness of this aluminum alloy compared to conventional cast aluminium reduces the risk of damage to the sensitive surfaces prepared with precision. The special novotek forming with high variation in the length of legs permits either a space-saving or – if necessary – a stretched out structure. The dimensional arrangement of the junctions allows easy installation of the clamping rings.

Area of application:
The novotek junctions made of aluminium allow the installation of vacuum attachments for the pressure range of 2500 mbar up to 10^{-7}mbar.

Properties of high-grade steel 1.4301 /1.4404:
- high leak rate (<10^{-9}mbarl/s)
- high conductance
- gap-free welded
- can be baked out up to 300 °C/350 °C

Description:
The KF junctions made of high-grade steel are either turned parts or welded constructions with interior welded novotek welding flanges.

Area of application:
The novotek junctions made of high-grade steel allow the installation of vacuum attachments for the pressure range of 2500 mbar up to 10^{-9}mbar. They are mainly used in high-vacuum technology if a bake-out capacity or special corrosion resistance is required.

Properties of polyoxymethylene (POM):

- electr. dielectric strength 25KV/mm
- light weight
- bake-out capacity up to 70°

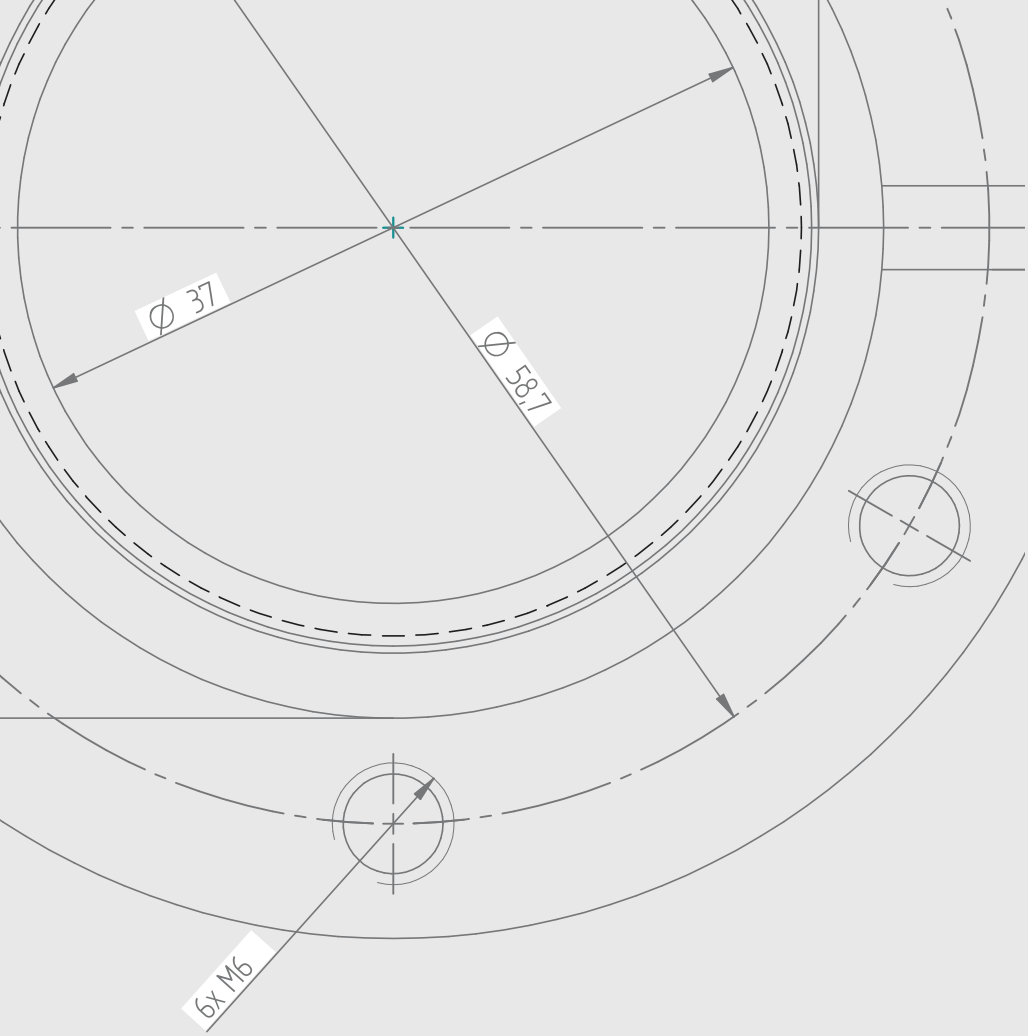
Description:

The novotek KF junctions made of polyoxymethylene are manufactured using turning and milling technology. The special novotek forming with high variation in the length of legs permits either a space-saving or – if necessary – a stretched out structure. The dimensional arrangement of the junctions allows easy installation of the clamping rings.

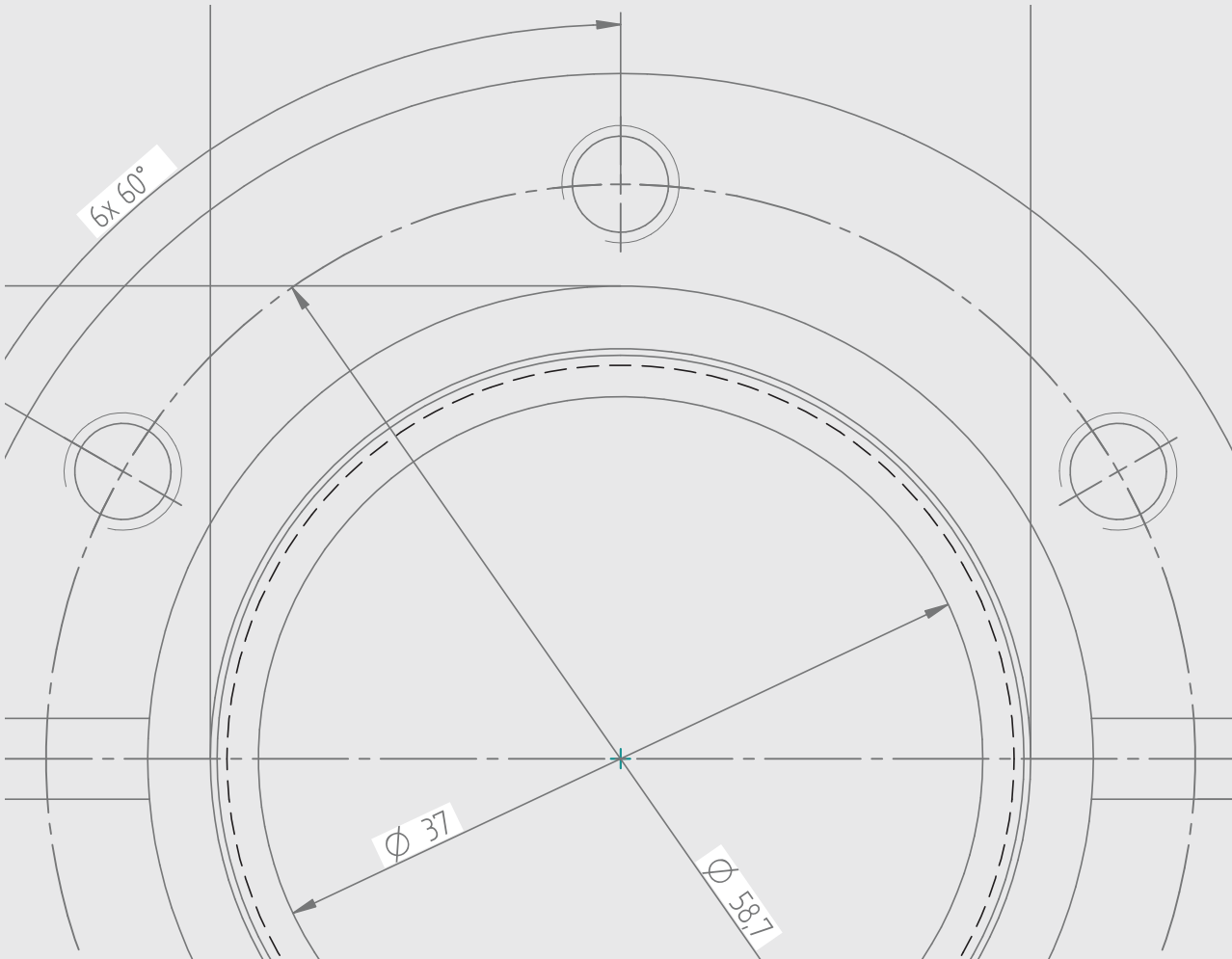
Area of application:

The novotek junctions made of polyoxymethylene allow the installation of vacuum attachments for the pressure range of 2500 mbar up to 10^{-5}mbar. Polyoxymethylene is characterised by its high strength, hardness and stiffness in a wide temperature range. It retains its high toughness up to –40 °C, has a high abrasion resistance, a low friction coefficient, high thermoforming stability, good electrical and dielectric properties and low water absorption. Due to the high crystallinity, the natural colour is opal white but the material can be dyed in all muted colours. Delivery state at novotek is opal white.

Tel. ++49 (0) 71 59 / 80 56 9 10 · www.novotek.de

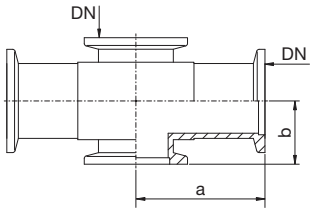


www.novotek.de



KF crosspiece

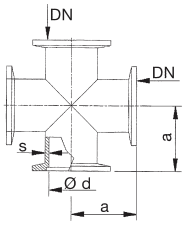
> Pressure range: 10^{-7}mbar to 2.5 bar*
> Temperature range: –196 °C to 150 °C*
* Take sealing materials and connecting elements into consideration



Aluminium 3.1645

Nominal width DN	a [mm]	b [mm]	Article no.
10	40	20	1011
16	40	20	1012
25	50	25	1014
40	65	35	1016

> Pressure range: 10^{-7}mbar to 2.5 bar with elastomer seals
> Pressure range: 10^{-9} mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C (1.4301)
> Temperature range: –196 °C to 350 °C (1.4404)
> Surface polished on inside and outside
* Take sealing materials and connecting elements into consideration



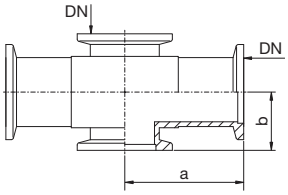
High-grade steel 1.4301

Nominal width DN	a [mm]	dia.d [mm]	S [mm]	Article no.
10	30	9	1.5	1111
16	40	15	1.5	1112
25	50	25	1.5	1114
40	65	37	1.5	1116
50	75	49	1.5	1117

High-grade steel 1.4404

Nominal width DN	A [mm]	dia.d [mm]	S [mm]	Article no.
10	30	9	1.5	11114
16	40	15	1.5	11124
25	50	25	1.5	11144
40	65	37	1.5	11164
50	75	49	1.5	11174

> Pressure range: 10^{-5}mbar to 2.5 bar*
> Temperature range: –40 °C to 70 °C*
* Take sealing materials and connecting elements into consideration

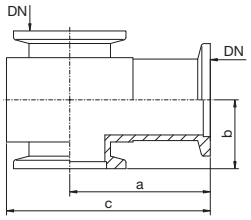


Polyoxymethylene (POM)

Nominal width DN	a [mm]	b [mm]	Article no.
16	40	20	1012P
25	50	25	1014P
40	65	35	1016P

T piece KF

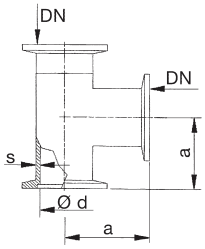
> Pressure range: 10^{-7} mbar to 2.5 bar*
> Temperature range: –196 °C to 150 °C*
* Take sealing materials and connecting elements into consideration



Aluminium 3.1645

Nominal width DN	a [mm]	b [mm]	c [mm]	Article no.
10	40	20	57.5	1021
16	40	20	57.5	1022
25	50	25	72.5	1024
40	65	35	95	1026
50	80	50	120	1027

> Pressure range: 10^{-7} mbar to 2.5 bar with elastomer seals
> Pressure range: 10^{-9} mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C (1.4301)
> Temperature range: –196 °C to 350 °C (1.4404)
> Surface polished on inside and outside
* Take sealing materials and connecting elements into consideration



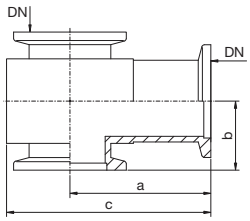
High-grade steel 1.4301

Nominal width DN	a [mm]	dia.d [mm]	s [mm]	Article no.
10	30	9	1.5	1121
16	40	15	1.5	1122
25	50	25	1.5	1124
40	65	37	1.5	1126
50	75	49	1.5	1127

High-grade steel 1.4404

Nominal width DN	a [mm]	dia.d [mm]	s [mm]	Article no.
10	30	9	1.5	11214
16	40	15	1.5	11224
25	50	25	1.5	11244
40	65	37	1.5	11264
50	75	49	1.5	11274

> Pressure range: 10^{-6} mbar to 2.5 bar*
> Temperature range: –40 °C to 70 °C*
* Take sealing materials and connecting elements into consideration

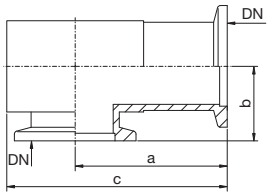


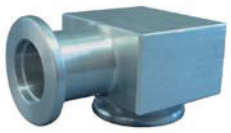
Polyoxymethylene (POM)

Nominal width DN	a [mm]	b [mm]	c [mm]	Article no.
16	40	20	57.5	1022P
25	50	25	72.5	1024P
40	65	35	95	1026P

KF elbow piece

> Pressure range: 10^{-7} mbar to 2.5 bar*
> Temperature range: –196 °C to 150 °C*
* Take sealing materials and connecting elements into consideration

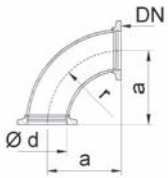




Aluminium 3.1645

Nominal width DN	a [mm]	b [mm]	c [mm]	Article no.
10	40	20	57.5	1031
16	40	20	57.5	1032
25	50	24.5	72.5	1034
40	65	34.5	95	1036
50	80	49.5	120	1037

> Pressure range: 10^{-7} mbar to 2.5 bar with elastomer seals
> Pressure range: 10^{-9} mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C (1.4301)
> Temperature range: –196 °C to 350 °C (1.4404)
> Surface polished on inside and outside
* Take sealing materials and connecting elements into consideration



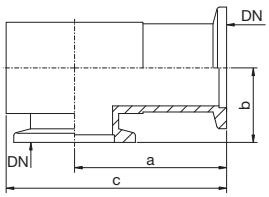
High-grade steel 1.4301

Nominal width DN	a [mm]	dia.d [mm]	s [mm]	r [mm]	Article no.
10	30	9	1.5	26	1131
16	40	15	1.5	35	1132
25	50	25	1.5	45	1134
40	65	41	2	55	1136
50	75	49	1.5	70	1137

High-grade steel 1.4404

Nominal width DN	A [mm]	dia.d [mm]	s [mm]	r [mm]	Article no.
10	30	9	1.5	26	11314
16	40	15	1.5	35	11324
25	50	25	1.5	45	11344
40	65	41	2	55	11364
50	75	49	1.5	70	11374

> Pressure range: 10^{-5} mbar to 2.5 bar*
> Temperature range: –40 °C to 70 °C*
* Take sealing materials and connecting elements into consideration

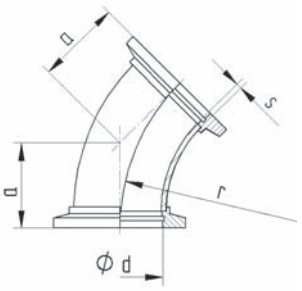


Polyoxymethylene (POM)

Nominal width DN	a [mm]	b [mm]	c [mm]	Article no.
16	40	20	57.5	1032P
25	50	25	72.5	1034P
40	65	35	95	1036P

KF elbow piece 45°

> Pressure range: 10^{-7} mbar to 2.5 bar with elastomer seals
> Pressure range: 10^{-9} mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C (1.4301)
> Temperature range: –196 °C to 350 °C (1.4404)
> Surface polished on inside and outside
* Take sealing materials and connecting elements into consideration



High-grade steel 1.4301

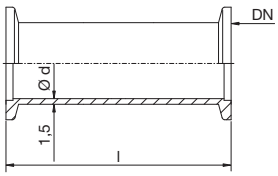
Nominal width DN	a [mm]	dia.d [mm]	s [mm]	r [mm]	Article no.
10	14.3	9	1.5	26	1131-45
16	19.5	15	1.5	35	1132-45
25	25.7	25	1.5	50	1134-45
40	29.85	37	1.5	60	1136-45
50	34	49	1.5	70	1137-45

High-grade steel 1.4404

Nominal width DN	a [mm]	dia.d [mm]	s [mm]	r [mm]	Article no.
10	14.3	9	1.5	26	1131-454
16	19.5	15	1.5	35	1132-454
25	25.7	25	1.5	50	1134-454
40	29.85	37	1.5	60	1136-454
50	34	49	1.5	70	1137-454

KF connecting piece

> Pressure range: 10^{-7} mbar to 2.5 bar with elastomer seals
> Pressure range: 10^{-9} mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C (1.4301)
> Temperature range: –196 °C to 350 °C (1.4404)
> Clean metallic surface on inside and outside
* Take sealing materials and connecting elements into consideration



High-grade steel 1.4301

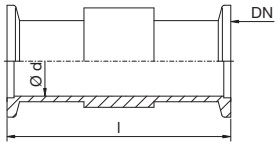
Nominal width DN	l [mm]	dia.d [mm]	Article no.
10	60	9	1171
16	80	15	1172
25	100	25	1174
40	130	37	1176
50	150	49	1177

High-grade steel 1.4404

Nominal width DN	l [mm]	dia.d [mm]	Article no.
10	60	9	11714
16	80	15	11724
25	100	25	11744
40	130	37	11764
50	150	49	11774

KF connecting piece

> Pressure range: 10^{-7} mbar to 2.5 bar*
> Temperature range: –196 °C to 150 °C*
* Take sealing materials and connecting elements into consideration



Aluminium 3.1645

Nominal width DN	l [mm]	dia.d [mm]	Article no.
16	80	16	1072
25	100	25	1074
40	130	40	1076

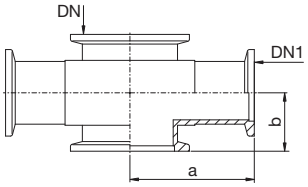
> Pressure range: 10^{-5} mbar to 2.5 bar*
> Temperature range: –40 °C to 70 °C*
* Take sealing materials and connecting elements into consideration

Polyoxymethylene (POM)

Nominal width DN	l [mm]	dia.d [mm]	Article no.
16	80	16	1072P
25	100	25	1074P
40	130	40	1076P

KF Reducing crosspiece

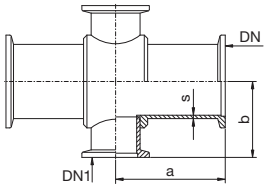
> Pressure range: 10^{-7} mbar to 2.5 bar*
> Temperature range: –196 °C to 150 °C*
* Take sealing materials and connecting elements into consideration



Aluminium 3.1645

Nominal width DN	Reduced nominal width DN 1	a [mm]	b [mm]	Article no.
25	**10**	40	22	1042
25	**16**	40	22	1046
40	**10**	50	30	1044
40	**16**	50	30	1047
40	**25**	50	30	1048
50	**10**	60	40	1045

> Pressure range: 10^{-7} mbar to 2.5 bar with elastomer seals
> Pressure range: 10^{-9} mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C
> Surface polished on inside and outside
* Take sealing materials and connecting elements into consideration

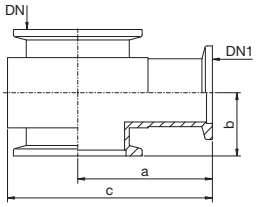


High-grade steel 1.4301

Nominal width DN	Reduced nominal width DN 1	a [mm]	b [mm]	s [mm]	Article no.
25	**10**	50	38	1.5	1142
25	**16**	50	40	1.5	1146
40	**10**	60	40	1.5	1144
40	**16**	65	40	1.5	1147
40	**25**	65	50	1.5	1148
50	**10**	75	45	1.5	1145
50	**16**	75	40	1.5	1149

Reducing T piece, KF

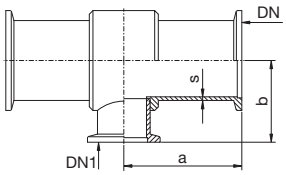
> Pressure range: 10^{-7}mbar to 2.5 bar*
> Temperature range: –196 °C to 150 °C*
* Take sealing materials and connecting elements into consideration



Aluminium 3.1645

Nominal width DN	Reduced nominal width DN 1	a [mm]	b [mm]	c [mm]	Article no.
25	**10**	40	22	62.5	1052
25	**16**	40	22	62.5	1056
40	**10**	55	30	80	1054
40	**16**	50	30	80	1057
40	**25**	50	30	80	1058
50	**10**	70	40	110	1055

> Pressure range: 10^{-7}mbar to 2.5 bar with elastomer seals
> Pressure range: 10^{-9} mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C
> Surface polished on inside and outside
* Take sealing materials and connecting elements into consideration



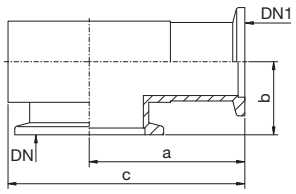
High-grade steel 1.4301

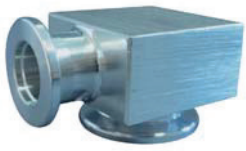
Nominal width DN	Reduced nominal width DN 1	a [mm]	b [mm]	s [mm]	Article no.
25	**10**	50	38	1.5	1152
25	**16**	50	40	1.5	1156
40	**10**	60	40	1.5	1154
40	**16**	65	40	1.5	1157
40	**25**	65	50	1.5	1158
50	**10**	75	45	1.5	1155

(Optical appearance of bodies can deviate!)

Reducing elbow piece, KF

> Pressure range: 10^{-7}mbar to 2.5 bar*
> Temperature range: –196 °C to 150 °C*
* Take sealing materials and connecting elements into consideration



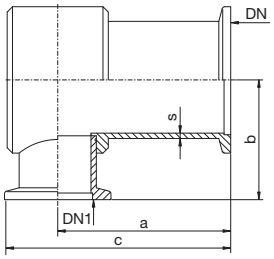


Aluminium 3.1645

Nominal width DN	Reduced nominal width DN 1	a [mm]	b [mm]	c [mm]	Article no.
25	**16**	40	22	62.5	1086
40	**16**	55	30	80	1087
40	**25**	55	30	80	1088

Reducing elbow piece, KF

> Pressure range: 10^{-7} mbar to 2.5 bar with elastomer seals
> Pressure range: 10^{-9} mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C
> Surfaces in turning quality
* Take sealing materials and connecting elements into consideration

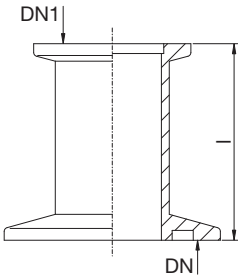


High-grade steel 1.4301

Nominal width DN	Reduced nominal width DN 1	a [mm]	b [mm]	c [mm]	s [mm]	Article no.
25	**16**	50	40	65	1.5	1186
40	**16**	65	40	80	1.5	1187
40	**25**	65	50	84	1.5	1188

KF reducing fitting

> Pressure range: 10^{-7} mbar to 2.5 bar*
> Temperature range: –196 °C to 150 °C*
* Take sealing materials and connecting elements into consideration

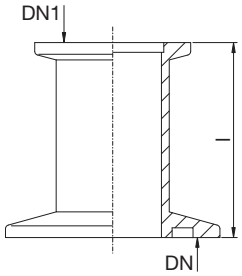


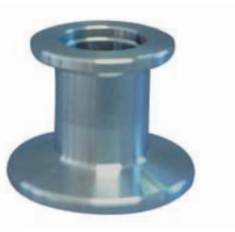
Aluminium 3.1645

Nominal width DN	Reduced nominal width DN 1	l [mm]	Article no.
25	**10**	30	1061
25	**16**	30	1062
40	**10**	30	1063
40	**16**	30	1065
40	**25**	30	1066
50	**40**	30	1068
50	**16**	30	1069
50	**25**	30	1070
Nominal width DN	**Reduced nominal width DN 1**	**l [mm]**	**Article no.**
25	**10**	40	1061-4
25	**16**	40	1062-4
40	**10**	40	1063-4
40	**16**	40	1065-4
40	**25**	40	1066-4
50	**40**	40	1068-4
50	**16**	40	1069-4
50	**25**	40	1070-4

KF reducing fitting

> Pressure range: 10^{-7} mbar to 2.5 bar with elastomer seals
> Pressure range: 10^{-9} mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C (1.4301)
> Temperature range: –196 °C to 350 °C (1.4404)
* Take sealing materials and connecting elements into consideration





High-grade steel 1.4301

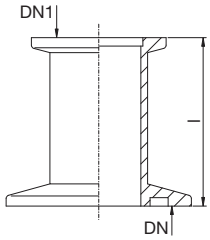
Nominal width DN	Reduced nominal width DN 1	l [mm]	Article no.
25	**10**	30	1161
25	**16**	30	1162
40	**10**	30	1163
40	**16**	30	1165
40	**25**	30	1166
50	**40**	30	1168
50	**16**	30	1169
50	**25**	30	1170
Nominal width DN	**Reduced nominal width DN 1**	**l [mm]**	**Article no.**
25	**10**	40	1161-4
25	**16**	40	1162-4
40	**10**	40	1163-4
40	**16**	40	1165-4
40	**25**	40	1166-4
50	**40**	40	1168-4
50	**16**	40	1169-4
50	**25**	40	1170-4

High-grade steel 1.4404

Nominal width DN	Reduced nominal width DN 1	l [mm]	Article no.
25	**16**	30	11624
40	**16**	30	11654
40	**25**	30	11664
50	**25**	30	11704
50	**40**	30	11684
50	**16**	30	11694

KF reducing fitting

> Pressure range: 10^{-5} mbar to 2.5 bar*
> Temperature range: –40 °C to 70 °C*
* Take sealing materials and connecting elements into consideration

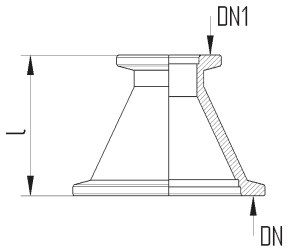


Polyoxymethylene (POM)

Nominal width DN	Reduced nominal width DN 1	l [mm]	Article no.
25	**16**	30	1062P
40	**16**	30	1065P
40	**25**	30	1066P

KF conical reducing fitting

> Pressure range: 10^{-7} mbar to 2.5 bar with elastomer seals
> Pressure range: 10^{-9} mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C (1.4301)
> Temperature range: –196 °C to 350 °C (1.4404)
* Take sealing materials and connecting elements into consideration



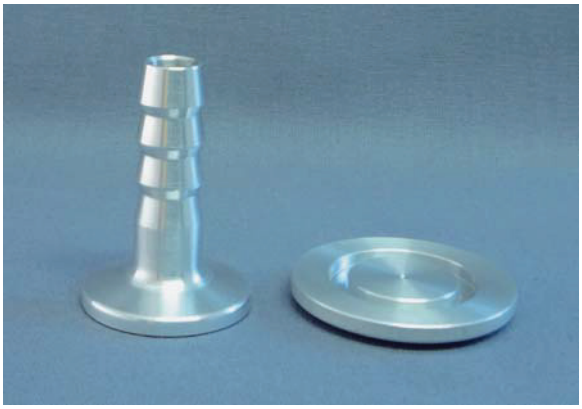
High-grade steel 1.4301

Nominal width DN	Reduced nominal width DN 1	l [mm]	Article no.
25	**16**	40	1162-4k
40	**16**	40	1165-4k
40	**25**	40	1166-4k
50	**40**	40	1168-4k
50	**16**	40	1169-4k
50	**25**	40	1170-4k

High-grade steel 1.4404

Nominal width DN	Reduced nominal width DN 1	l [mm]	Article no.
25	**16**	40	1162-4k4
40	**16**	40	1165-4k4
40	**25**	40	1166-4k4
50	**40**	40	1168-4k4
50	**16**	40	1169-4k4
50	**25**	40	1170-4k4

KF components



Properties, aluminium 3.1645:

- high leak rate (<10^{-7} mbarl/s)
- high conductance
- low level of outgassing
- compact structure

Description:

The novotek aluminium components are made of solid material. The criteria for selection of the special aluminum alloy are low vapour pressure, high corrosion resistance and a high level of hardness. The elaborate manufacturing process of these KF components made of solid material has been selected to avoid the porosity associated with cast aluminium. The high level of hardness of this aluminum alloy compared to conventional cast aluminium reduces the risk of damage to the sensitive surfaces prepared with precision.

Area of application:

The novotek components made of aluminium allow the installation of vacuum attachments for the pressure range of 2500 mbar up to 10^{-7}mbar.

Properties of high-grade steel 1.4301 /1.4404:

- high leak rate (<10^{-9}mbarl/s)
- high conductance
- gap-free welded
- can be baked out up to 300 °C/350 °C

Description:

The novotek KF components are designed in accordance with DIN 28403. This ensures compatibility of all components with one another. The components blind flange and KF with hose nozzle are designed with a nominal width combination, i.e. they can be used for two nominal widths.

Area of application:

The novotek components made of high-grade steel allow the installation of vacuum attachments for the pressure range of 2500 mbar up to 10^{-9}mbar. They are mainly used in high-vacuum technology if a bake-out capacity or special corrosion resistance is required.

Properties of polyoxymethylene (POM):

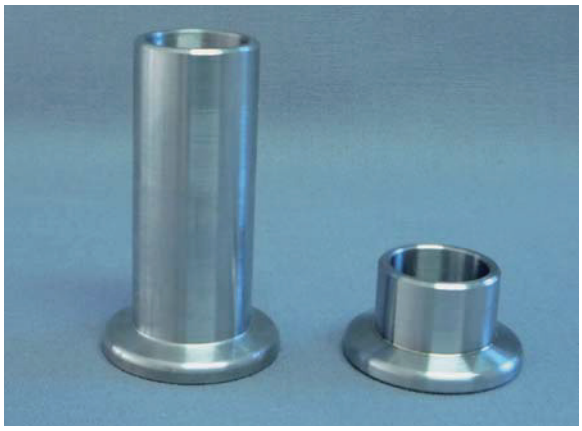
- resistant to diluted alkaline solutions
- electr. dielectric strength. 25KV/mm
- light weight
- bake-out capacity up to 70°

Description:

The novotek components made of polyoxymethylene are prepared with turning technology. The dimensional arrangement of the junctions allows easy installation of the clamping rings.

Area of application:

The novotek components made of polyoxymethylene allow the installation of vacuum attachments for the pressure range of 2500 mbar up to 10^{-5}mbar. Polyoxymethylene is characterised by its high strength, hardness and stiffness in a wide temperature range. It retains its high toughness up to –40 °C, has a high abrasion resistance, a low friction coefficient, high thermoforming stability, good electrical and dielectric properties and low water absorption. Due to the high crystallinity, the natural colour is opal white but the material can be dyed in all muted colours. Delivery state at novotek is opal white.



Properties of steel (1.0037 / 1.0577):

- high leak rate (<10^{-9}mbarl/s)
- high conductance
- bake-out capacity up to 300 °C

Description:

The KF components are manufactured from steels of grade 1.0036-38 (St37-2) 1.0570 or 1.0577 (St52-3). They can be welded very easily and can be stress-relieved. Furthermore, they are highly suitable for nickel or zinc coating.

Area of application:

The novotek components made of steel allow the installation of vacuum attachments for the pressure range of 2500 mbar up to 10^{-9}mbar. They are mainly used in vacuum technology if special corrosion resistance is not required.

Properties of brass 2.0401 / MS58):

- high leak rate (<10^{-9}mbarl/s)
- high conductance
- bake-out capacity up to 110 °C

Description:

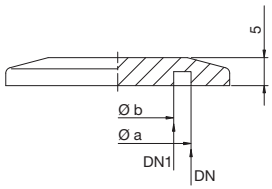
The KF components are manufactured from turned brass of grade 2.0401. They are very easily soldered. Furthermore, they are highly suitable for nickel plating.

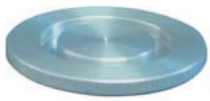
Area of application:

The novotek components made of brass allow the installation of vacuum attachments for the pressure range of 2500 mbar up to 10^{-9}mbar. The nickel-plated variant is often used in high-vacuum technology as a more cost-effective alternative to high-grade steel. However, the corrosion resistance is still high.

KF blind flange

> Pressure range: 10^{-7}mbar to 2.5 bar
> Temperature range: –196 °C to 150 °C
* Take sealing materials and connecting elements into consideration

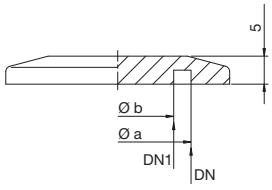




Aluminium 3.1645

Nominal width DN	Nominal width DN1	a [mm]	b [mm]	Article no.
16	**10**	17.2	9.8	1402
25	**20**	26.2	19.8	1404
40	**32**	41.2	31.8	1406
50		52.4	46.00	1407

> Pressure range: 10^{-5} mbar to 2.5 bar*
> Temperature range: –40 °C to 70 °C*
* Take sealing materials and connecting elements into consideration

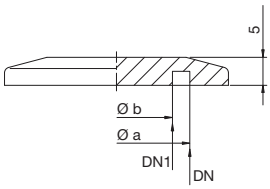


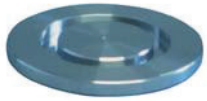
Polyoxymethylene (POM)

Nominal width DN	Nominal width DN1	a [mm]	b [mm]	Article no.
16	**10**	17.2	9.8	1402P
25	**20**	26.2	19.8	1404P
40	**32**	41.2	31.8	1406P
50		52.4	46.00	1407P

KF blind flange

> Pressure range: 10^{-7} mbar to 2.5 bar with elastomer seals
> Pressure range: 10^{-9} mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C (1.4301)
> Temperature range: –196 °C to 350 °C (1.4404)
* Take sealing materials and connecting elements into consideration





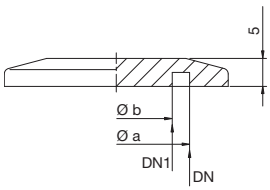
High-grade steel 1.4301

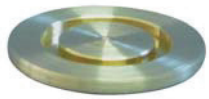
Nominal width DN	Nominal width DN1	a [mm]	b [mm]	Article no.
16	**10**	17.2	9.8	1422
25	**20**	26.2	19.8	1424
40	**32**	41.2	31.8	1426
50		52.4	46.00	1427

High-grade steel 1.4404

Nominal width DN	Nominal width DN1	a [mm]	b [mm]	Article no.
16	**10**	17.2	9.8	14224
25	**20**	26.2	19.8	14244
40	**32**	41.2	31.8	14264
50		52.4	46.00	14274

> Pressure range: 10^{-7} mbar to 2.5 bar with elastomer seals
> Pressure range: 10^{-9} mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 110 °C
* Take sealing materials and connecting elements into consideration



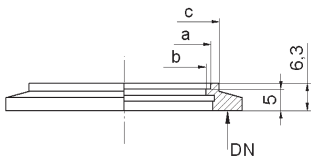


Brass 2.0401

Nominal width DN	Nominal width DN1	a [mm]	b [mm]	Article no.
16	**10**	17.2	9.8	1412
25	**20**	26.2	19.8	1414
40	**32**	41.2	31.8	1416
50		52.4	46.00	1417

KF welded flange

> Pressure range: 10^{-7} mbar to 2.5 bar with elastomer seals
> Pressure range: 10^{-9} mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C
* Take sealing materials and connecting elements into consideration

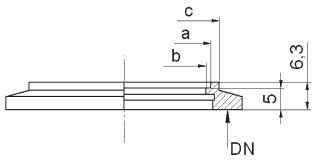


High-grade steel 1.4301

Nominal width DN	a [mm]	b [mm]	c [mm]	Article no.
10	**12.4**	10	14.5	1531
16	**18.3**	16	20.3	1532
16	**19.3**	16	20.3	1532-19
25	**28.3**	25.5	30.5	1534
40	**40.3**	38	44.3	1536
40	**44.7**	40.5	/	1536-45
50	**52.3**	50	56	1537

KF welded flange

> Pressure range: 10^{-7} mbar to 2.5 bar with elastomer seals
> Pressure range: 10^{-9} mbar to 2.5 bar with metal seals
> Temperature range: –196°C to 350 °C
* Take sealing materials and connecting elements into consideration

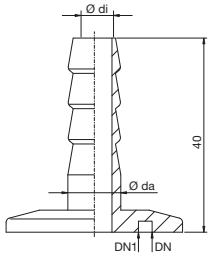


High-grade steel 1.4404

Nominal width DN	a [mm]	b [mm]	c [mm]	Article no.
10	12.4	10	14.5	15314
16	18.3	16	20.3	15324
16	19.3	16	20.3	15324-19
25	28.3	25.5	30.5	15344
40	40.3	38	44.3	15364
40	44.7	40.5	/	15364-45
50	52.3	50	56	15374

KF hose nozzle (12/8. 8/4 and 16/13)

> Pressure range: 10^{-7} mbar to 2.5 bar with elastomer seals
> Temperature range: –196 °C to 150 °C
* Take sealing materials and connecting elements into consideration



Aluminium 3.1645 12/8

Nominal width DN	Nominal width DN1	dia.da [mm]	dia.di [mm]	Article no.
16	**10**	12	8	1602
25	**20**	12	8	1604
40	**32**	12	8	1606
50		12	8	1608

Aluminium 3.1645 8/4

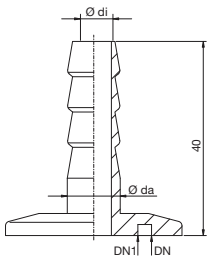
Nominal width DN	Nominal width DN1	dia.da [mm]	dia.di [mm]	Article no.
16	**10**	8	4	1601
25	**20**	8	4	1603
40	**32**	8	4	1605
50		8	4	1607

> Pressure range: 10^{-7} mbar to 2.5 bar with elastomer seals
> Pressure range: 10^{-9} mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C
* Take sealing materials and connecting elements into consideration

High-grade steel 1.4301 16/13

Nominal width DN	Nominal width DN1	dia.da [mm]	dia.di [mm]	Article no.
16	**10**	16	13	1622
25	**20**	16	13	1624
40	**32**	16	13	1626
50		16	13	1627

KF hose nozzle (12/8 and 8/4)



> Pressure range: 10^{-7} mbar to 2.5 bar with elastomer seals
> Pressure range: 10^{-9} mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C
* Take sealing materials and connecting elements into consideration

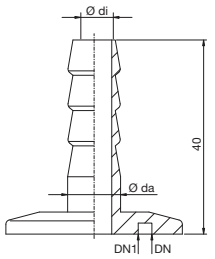
High-grade steel 1.4301 12/8

Nominal width DN	Nominal width DN1	dia.da [mm]	dia.di [mm]	Article no.
16	**10**	12	8	1612
25	**20**	12	8	1614
40	**32**	12	8	1616
50		12	8	1618

High-grade steel 1.4301 8/4

Nominal width DN	Nominal width DN1	dia.da [mm]	dia.di [mm]	Article no.
16	**10**	8	4	1611
25	**20**	8	4	1613
40	**32**	8	4	1615

KF hose nozzle (12/8)



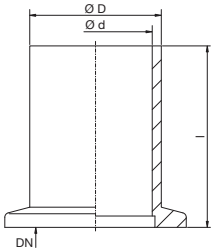
> Pressure range: 10^{-5} mbar to 2.5 bar*
> Temperature range: –40 °C to 70 °C*
* Take sealing materials and connecting elements into consideration

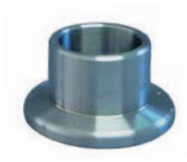
Polyoxymethylene (POM) 12/8

Nominal width DN	Nominal width DN1	dia.da [mm]	dia.di [mm]	Article no.
16	**10**	12	8	1602P
25	**20**	12	8	1604P
40	**32**	12	8	1606P

KF with flanged socket, short

(novotek standard)





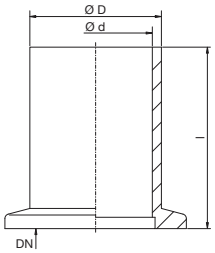
> Pressure range: 10^{-7} mbar to 2.5 bar with elastomer seals
> Pressure range: 10^{-9} mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C
* Take sealing materials and connecting elements into consideration

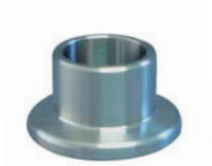
Steel 1.0037

Nominal width DN	l [mm]	dia.D [mm]	dia.d [mm]	Article no.
10	16	14	10	1511
16	16	20	16	1512
20	20	25	20	1513
25	20	29	25	1514
32	25	38	32	1515
40	25	45	40	1516
50	25	55	50	1517

KF with flanged socket, short

(novotek standard)

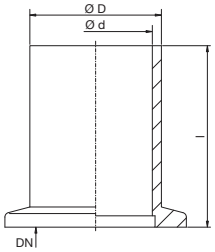


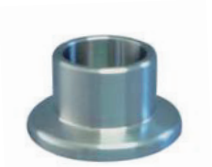


> Pressure range: 10^{-7} mbar to 2.5 bar with elastomer seals
> Pressure range: 10^{-9} mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C
* Take sealing materials and connecting elements into consideration

High-grade steel 1.4301

Nominal width DN	l [mm]	dia.D [mm]	dia.d [mm]	Article no.
10	16	14	10	1521
16	16	20	16	1522
20	20	25	20	1523
25	20	29	25	1524
32	25	38	32	1525
40	25	45	40	1526
50	25	55	50	1527

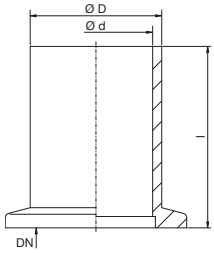




> Pressure range: 10^{-7} mbar to 2.5 bar with elastomer seals
> Pressure range: 10^{-9} mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C
> Temperature range: –196 °C to 350 °C
* Take sealing materials and connecting elements into consideration

High-grade steel 1.4404

Nominal width DN	l [mm]	dia.D [mm]	dia.d [mm]	Article no.
10	16	14	10	15214
16	16	20	16	15224
25	20	29	25	15244
40	25	45	40	15264
50	25	55	50	15274



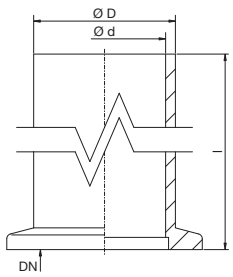
> Pressure range: 10^{-7} mbar to 2.5 bar with elastomer seals
> Temperature range: –196 °C to 110 °C
* Take sealing materials and connecting elements into consideration

Brass 2.0401

Nominal width DN	l [mm]	dia.D [mm]	dia.d [mm]	Article no.
10	16	14	10	1501
16	16	20	16	1502
20	20	25	20	1503
25	20	29	25	1504
32	25	38	32	1505
40	25	45	40	1506
50	25	55	50	1507

KF with flanged socket, long

(novotek standard)



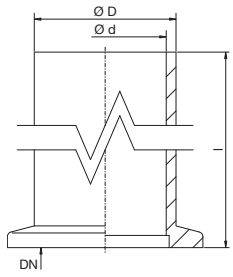
> Pressure range: 10^{-7} mbar to 2.5 bar with elastomer seals
> Pressure range: 10^{-9} mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C
> Temperature range: –196 °C to 350 °C
* Take sealing materials and connecting elements into consideration

High-grade steel 1.4301

Nominal width DN	l [mm]	dia.D [mm]	dia.d [mm]	Article no.
10	52	14	10	1571
16	52	20	16	1572
20	55	25	20	1573
25	55	29	25	1574
32	58	38	32	1575
40	58	45	40	1576
50	58	55	50	1577

High-grade steel 1.4404

Nominal width DN	l [mm]	dia.D [mm]	dia.d [mm]	Article no.
10	52	14	10	15714
16	52	20	16	15724
25	55	29	25	15744
40	58	45	40	15764
50	58	55	50	15774



> Pressure range: 10^{-5} mbar to 2.5 bar*
> Temperature range: –40 °C to 70 °C*
* Take sealing materials and connecting elements into consideration

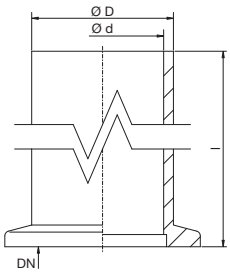
Polyoxymethylene (POM)

Nominal width DN	l [mm]	dia.D [mm]	dia.d [mm]	Article no.
16	52	20	16	1572P
25	55	29	25	1574P
40	58	45	40	1576P

KF with flanged socket, long

(novotek standard)

> Pressure range: 10^{-7} mbar to 2.5 bar with elastomer seals
> Pressure range: 10^{-9} mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C
* Take sealing materials and connecting elements into consideration



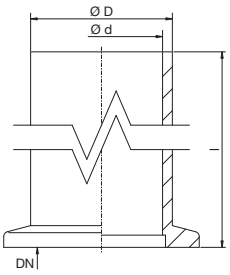
Steel 1.0037

Nominal width DN	l [mm]	dia.D [mm]	dia.d [mm]	Article no.
10	52	14	10	1561
16	52	20	16	1562
20	55	25	20	1563
25	55	29	25	1564
32	58	38	32	1565
40	58	45	40	1566
50	58	55	50	1567

KF with flanged socket, long

(novotek standard)

> Pressure range: 10^{-7} mbar to 2.5 bar with elastomer seals
> Temperature range: –196 °C to 110 °C
* Take sealing materials and connecting elements into consideration

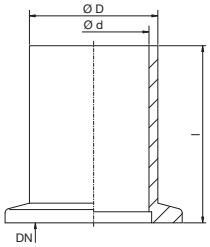


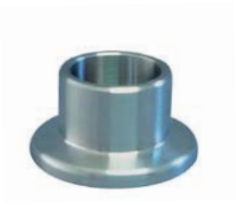
Brass 2.0401

Nominal width DN	l [mm]	dia.D [mm]	dia.d [mm]	Article no.
10	52	14	10	1551
16	52	20	16	1552
20	55	25	20	1553
25	55	29	25	1554
32	58	38	32	1555
40	58	45	40	1556
50	58	55	50	1557

KF with flanged socket l = 30

(according to DIN28403)





> Pressure range: 10^{-7} mbar to 2.5 bar with elastomer seals
> Pressure range: 10^{-9} mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C
> Temperature range: –196°C to 350 °C
* Take sealing materials and connecting elements into consideration

High-grade steel 1.4301

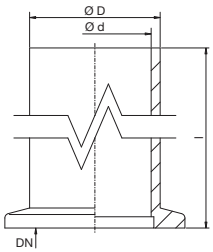
Nominal width DN	l [mm]	dia.D [mm]	dia.d [mm]	Article no.
10	30	14	10	1521-3
16	30	20	16	1522-3
25	30	28	24	1524-3
40	30	44.5	40.5	1526-3
50	30	57	51	1527-3

High-grade steel 1.4404

Nominal width DN	l [mm]	dia.D [mm]	dia.d [mm]	Article no.
10	30	14	10	1521-34
16	30	20	16	1522-34
25	30	28	24	1524-34
40	30	44.5	40.5	1526-34
50	30	57	51	1527-34

KF with flanged socket l = 70

(according to DIN28403)



> Pressure range: 10^{-7} mbar to 2.5 bar with elastomer seals
> Pressure range: 10^{-9} mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C
> Temperature range: –196°C to 350 °C
* Take sealing materials and connecting elements into consideration

High-grade steel 1.4301

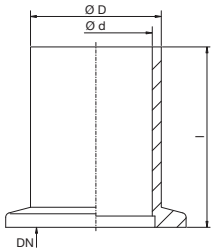
Nominal width DN	l [mm]	dia.D [mm]	dia.d [mm]	Article no.
10	70	14	10	1571-7
16	70	20	16	1572-7
25	70	28	24	1574-7
40	70	44.5	40.5	1576-7
50	70	57	51	1577-7

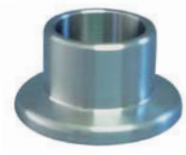
High-grade steel 1.4404

Nominal width DN	l [mm]	dia.D [mm]	dia.d [mm]	Article no.
10	70	14	10	1571-74
16	70	20	16	1572-74
25	70	28	24	1574-74
40	70	44.5	40.5	1576-74
50	70	57	51	1577-74

KF with flanged socket, imperial (for pipe dimensions according to DIN2462/2463)

> Pressure range: 10^{-7} mbar to 2.5 bar with elastomer seals
> Pressure range: 10^{-9} mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 110 °C (brass)
> Temperature range: –196 °C to 350 °C (1.4404)
* Take sealing materials and connecting elements into consideration



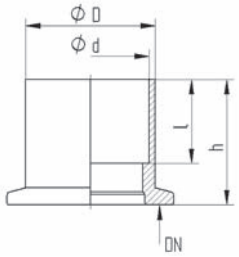


High-grade steel 1.4404

Nominal width DN	l [mm]	dia.D [mm]	Wall thickness [mm]	Article no.
10	30	1/4“ 6.35	0.91	1520-34Z
10	30	1/2“ 12.7	1.65	1521-34Z
16	30	3/4“ 19.05	1.65	1522-34Z
25	30	1“ 25.4	1.65	1524-34Z
40	30	1 1/2“ 38.1	1.65	1525-34Z
40	30	1 1/4“ 42.4	2.0	15255-34Z
40	30	1 3/4“ 44.5	2.0	1526-34Z
50	30	2“ 50.8	1.65	1527-34Z

KF brass solder flange for metric copper pipe

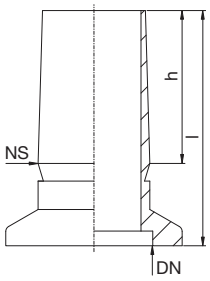
> For pipe dimensions in accordance with DIN 2462/2463
> Pressure range: 10^{-7} mbar to 2.5 bar with elastomer seals
> Pressure range: 10^{-9} mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 110 °C (brass)
* Take sealing materials and connecting elements into consideration



Brass 2.0401

Nominal width DN	dia.d [mm] (for CU pipe)	dia.D [mm]	l [mm]	h [mm]	Article no.
10	12.1 (12x1)	14	10	20	1520M
16	15.1 (15x1)	17	12	20	1521M
16	18.1 (18x1)	20	14	30	1522M
25	22.12 (22x1)	25	17	30	1523M
25	28.12 (28x1.5)	31	20	30	1524M
40	35.15 (35x1.5)	38	24	40	1525M
40	42.16 (42x1.5)	45	29	40	1526M
50	54.17 (54x2)	57	29	40	1527M

KF with male ground joint

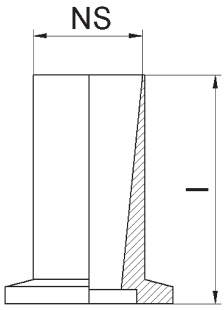


> Pressure range: 10^{-7} mbar to 2.5 bar with elastomer seals
> Pressure range: 10^{-9} mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C
* Take sealing materials and connecting elements into consideration

High-grade steel 1.4301

Nominal width DN	NS	h [mm]	l [mm]	Article no.
10	**19/26**	26	40	1701
16	**19/26**	26	40	1702
25	**29/32**	32	41.5	1704
40	**40/45**	40	49.5	1706

KF with female ground joint

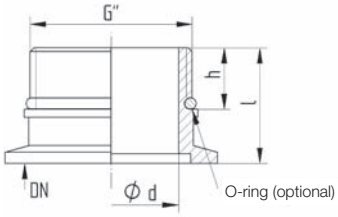


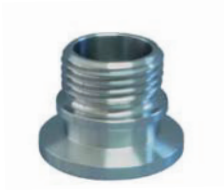
> Pressure range: 10^{-7} mbar to 2.5 bar with elastomer seals
> Pressure range: 10^{-9} mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C
* Take sealing materials and connecting elements into consideration

High-grade steel 1.4301

Nominal width DN	NS	l [mm]	Article no.
10	**14/35**	38	1711
10	**19/38**	41	1712

KF male thread flange





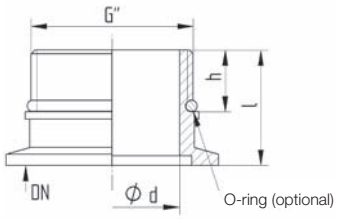
> Pressure range: 10^{-7} mbar to 2.5 bar with elastomer seals
> Optional O-ring, all sizes 2.50 Euro, order example: 1594-OR
> Temperature range: –196 °C to 300 °C
* Take sealing materials and connecting elements into consideration

High-grade steel 1.4301

Nominal width DN	Thread [Inches]	dia.d [mm]	h [mm]	l [mm]	O-ring (optional) [mm]	Article no.
10	**¼"**	10	11	18	14x3	1590
10	**3/8"**	10	9	18	14x3	1591
16	**½"**	16	11	22	17x3	1592
25	**¾"**	20	15	26.5	24x3	1593
25	**1"**	25	15	26.5	28x3	1594
40	**1 ¼"**	35	16	30	38x3	1595
40	**1 ½"**	40	16	30	42x3	1596
50	**2"**	50	18	33	55x4	1597

KF male thread flange

> Pressure range: 10^{-7} mbar to 2.5 bar with elastomer seals
> Optional O-ring, all sizes 2.50 Euro, order example: 1584-OR
> Temperature range: –196 °C to 110 °C
* Take sealing materials and connecting elements into consideration

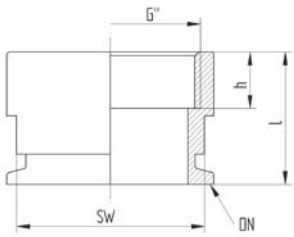


Brass 2.0401 nickel-plated

Nominal width DN	Thread [Inches]	dia.d [mm]	h [mm]	l [mm]	O-ring (optional) [mm]	Article no.
10	**¼"**	10	11	18	14x3	1580
10	**3/8"**	10	9	18	14x3	1581
16	**½"**	16	11	22	17x3	1582
25	**¾"**	20	15	26.5	24x3	1583
25	**1"**	25	15	26.5	28x3	1584
40	**1 ¼"**	35	16	30	38x3	1585
40	**1 ½"**	40	16	30	42x3	1586
50	**2"**	50	18	33	55x4	1587

KF female thread flange

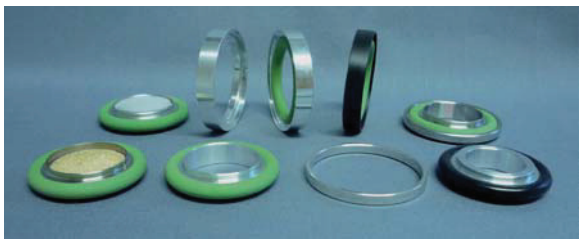
> Pressure range: 10^{-7} mbar to 2.5 bar with elastomer seals
> Pressure range: 10^{-9} mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C
* Take sealing materials and connecting elements into consideration



High-grade steel 1.4301

Nominal width DN	Thread [Inches]	A/F	l [mm]	h [mm]	Article no.
10	**¼"**	22	35	15	1540
10	**3/8"**	22	35	15	1541
16	**½"**	22	35	15	1542
25	**¾"**	30	35	15	1543
25	**1"**	36	35	15	1544
40	**1"**	50	35	15	1545
40	**1 ¼"**	50	35	15	15451
40	**1 ½"**	50	35	15	1546
50	**2"**	60	35	15	1547

KF seal components



Properties:

- temperature range –196 °C to +200 °C
- suitable for high vacuum up to 1x10^{-9}mbar
- combinable depending on application area

Description:

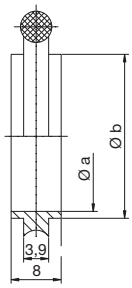
novotek seal components can be selected depending on the technical vacuum requirements, e.g. bake-out capacity, outgassing and corrosion resistance. The O-ring seals used differ with regard to their temperature stability and compatibility with different media. A series of combination options are described under “Materials” at the beginning of our catalogue.

If there are special requirements, e.g. no permeation of gases or long-term high temperature requirements, aluminium sealing rings are used.

Area of application:

The novotek seal components permit the installation of vacuum attachments for the pressure range from 2500 mbar to 10^{-7}mbar for elastomer seals and up to 10^{-9} mbar for metal seals.

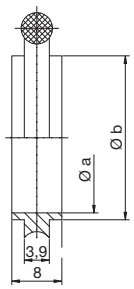
Centring ring, aluminium (3.1645)



> Pressure range: 10^{-7}mbar to 2.5 bar
> Temperature range for aluminium: –196 °C to 150 °C*
> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C

O-ring	Nominal width DN	dia.a [mm]	dia.b [mm]	Article no.
Perbunan® (NBR)	**10**	10	12	1201
Perbunan® (NBR)	**16**	16	17	1202
Perbunan® (NBR)	**20**	20	22	1203
Perbunan® (NBR)	**25**	25	26	1204
Perbunan® (NBR)	**32**	32	34	1205
Perbunan® (NBR)	**40**	40	41	1206
Perbunan® (NBR)	**50**	50	52	1207
Viton® (FKM,FPM)	**10**	10	12	1091
Viton® (FKM,FPM)	**16**	16	17	1092
Viton® (FKM,FPM)	**20**	20	22	1093
Viton® (FKM,FPM)	**25**	25	26	1094
Viton® (FKM,FPM)	**32**	32	34	1095
Viton® (FKM,FPM)	**40**	40	41	1096
Viton® (FKM,FPM)	**50**	50	52	1097
EPDM	**10**	10	12	1201E
EPDM	**16**	16	17	1202E
EPDM	**25**	25	26	1204E
EPDM	**40**	40	41	1206E
EPDM	**50**	50	52	1207E
Neoprene® (CR)	**10**	10	12	1201N
Neoprene® (CR)	**16**	16	17	1202N
Neoprene® (CR)	**25**	25	26	1204N
Neoprene® (CR)	**40**	40	41	1206N
Neoprene® (CR)	**50**	50	52	1207N
Silicone (VMQ)	**10**	10	12	1201S
Silicone (VMQ)	**16**	16	17	1202S
Silicone (VMQ)	**25**	25	26	1204S
Silicone (VMQ)	**40**	40	41	1206S
Silicone (VMQ)	**50**	50	52	1207S
FFKM	**10**	10	12	1201F
FFKM	**16**	16	17	1202F
FFKM	**25**	25	26	1204F
FFKM	**40**	40	41	1206F
FFKM	**50**	50	52	1207F

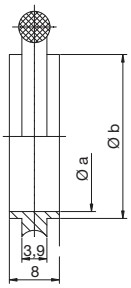
Centring ring, high-grade steel (1.4301)

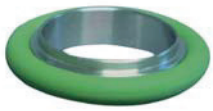


> Pressure range: 10^{-7} mbar to 2.5 bar
> Temperature range 1.4301: –196 °C to 300 °C
> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C

O-ring	Nominal width DN	dia.a [mm]	dia.b [mm]	Article no.
Perbunan® (NBR)	**10**	10	12	1211
Perbunan® (NBR)	**16**	16	17	1212
Perbunan® (NBR)	**20**	20	22	1213
Perbunan® (NBR)	**25**	25	26	1214
Perbunan® (NBR)	**32**	32	34	1215
Perbunan® (NBR)	**40**	40	41	1216
Perbunan® (NBR)	**50**	50	52	1217
Viton® (FKM,FPM)	**10**	10	12	1221
Viton® (FKM,FPM)	**16**	16	17	1222
Viton® (FKM,FPM)	**20**	20	22	1223
Viton® (FKM,FPM)	**25**	25	26	1224
Viton® (FKM,FPM)	**32**	32	34	1225
Viton® (FKM,FPM)	**40**	40	41	1226
Viton® (FKM,FPM)	**50**	50	52	1227
EPDM	**10**	10	12	1211E
EPDM	**16**	16	17	1212E
EPDM	**25**	25	26	1214E
EPDM	**40**	40	41	1216E
EPDM	**50**	50	52	1217E
O-ring, neoprene® (CR)	**10**	10	12	1211N
O-ring, neoprene® (CR)	**16**	16	17	1212N
O-ring, neoprene® (CR)	**25**	25	26	1214N
O-ring, neoprene® (CR)	**40**	40	41	1216N
O-ring, neoprene® (CR)	**50**	50	52	1217N
Silicone (VMQ)	**10**	10	12	1211S
Silicone (VMQ)	**16**	16	17	1212S
Silicone (VMQ)	**25**	25	26	1214S
Silicone (VMQ)	**40**	40	41	1216S
Silicone (VMQ)	**50**	50	52	1217S
FFKM	**10**	10	12	1211F
FFKM	**16**	16	17	1212F
FFKM	**25**	25	26	1214F
FFKM	**40**	40	41	1216F
FFKM	**50**	50	52	1217F

Centring ring, high-grade steel (1.4404)

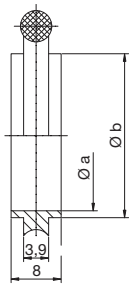




> Pressure range: 10^{-7}mbar to 2.5 bar
> Temperature range 1.4404: –196 °C to 350 °C
> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C

O-ring	Nominal width DN	dia.a [mm]	dia.b [mm]	Article no.
Perbunan® (NBR)	**10**	10	12	12114
Perbunan® (NBR)	**16**	16	17	12124
Perbunan® (NBR)	**20**	20	22	12134
Perbunan® (NBR)	**25**	25	26	12144
Perbunan® (NBR)	**32**	32	34	12154
Perbunan® (NBR)	**40**	40	41	12164
Perbunan® (NBR)	**50**	50	52	12174
Viton® (FKM,FPM)	**10**	10	12	12214
Viton® (FKM,FPM)	**16**	16	17	12224
Viton® (FKM,FPM)	**20**	20	22	12234
Viton® (FKM,FPM)	**25**	25	26	12244
Viton® (FKM,FPM)	**32**	32	34	12254
Viton® (FKM,FPM)	**40**	40	41	12264
Viton® (FKM,FPM)	**50**	50	52	12274
EPDM	**10**	10	12	1211E4
EPDM	**16**	16	17	1212E4
EPDM	**25**	25	26	1214E4
EPDM	**40**	40	41	1216E4
EPDM	**50**	50	52	1217E4
O-ring, neoprene® (CR)	**10**	10	12	1211N4
O-ring, neoprene® (CR)	**16**	16	17	1212N4
O-ring, neoprene® (CR)	**25**	25	26	1214N4
O-ring, neoprene® (CR)	**40**	40	41	1216N4
O-ring, neoprene® (CR)	**50**	50	52	1217N4
Silicone (VMQ)	**10**	10	12	1211S4
Silicone (VMQ)	**16**	16	17	1212S4
Silicone (VMQ)	**25**	25	26	1214S4
Silicone (VMQ)	**40**	40	41	1216S4
Silicone (VMQ)	**50**	50	52	1217S4
FFKM	**10**	10	12	1211F4
FFKM	**16**	16	17	1212F4
FFKM	**25**	25	26	1214F4
FFKM	**40**	40	41	1216F4
FFKM	**50**	50	52	1217F4

Centring ring, polyoxymethylene (POM)

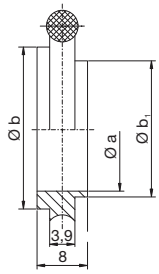


> Pressure range: 10^{-5} mbar to 2.5 bar*
> Temperature range for POM: –40 °C to 70 °C*
> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C

O-ring	Nominal width DN	dia.a [mm]	dia.b [mm]	Article no.
Perbunan® (NBR)	**16**	16	17	1202P
Perbunan® (NBR)	**25**	25	26	1204P
Perbunan® (NBR)	**40**	40	41	1206P
Viton® (FKM,FPM)	**16**	16	17	1092P
Viton® (FKM,FPM)	**25**	25	26	1094P
Viton® (FKM,FPM)	**40**	40	41	1096P
EPDM	**16**	16	17	1202PE
EPDM	**25**	25	26	1204PE
EPDM	**40**	40	41	1206PE
Neoprene® (CR)	**16**	16	17	1202PN
Neoprene® (CR)	**25**	25	26	1204PN
Neoprene® (CR)	**40**	40	41	1206PN
Silicone (VMQ)	**16**	16	17	1202PS
Silicone (VMQ)	**25**	25	26	1204PS
Silicone (VMQ)	**40**	40	41	1206PS
FFKM	**16**	16	17	1202PF
FFKM	**25**	25	26	1204PF
FFKM	**40**	40	41	1206PF

Adapter centring ring, aluminium (3.1645)

> Pressure range: 10^{-7}mbar to 2.5 bar
> Temperature range for aluminium: –196 °C to 150 °C*
> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C



O-ring	Nominal width DN	Nominal width DN1	dia.a [mm]	dia.b [mm]	dia.b1 [mm]	Article no.
Perbunan® (NBR)	**16**	**10**	10	17	12	1231
Perbunan® (NBR)	**25**	**20**	20	26	22	1232
Perbunan® (NBR)	**40**	**32**	32	41	34	1233
Viton (FKM,FPM)	**16**	**10**	10	17	12	1236
Viton (FKM,FPM)	**25**	**20**	20	26	22	1237
Viton (FKM,FPM)	**40**	**32**	32	41	34	1238
EPDM	**16**	**10**	10	17	12	1231E
EPDM	**25**	**20**	20	26	22	1232E
EPDM	**40**	**32**	32	41	34	1233E
O-ring, neoprene® (CR)	**16**	**10**	10	17	12	1231N
O-ring, neoprene® (CR)	**25**	**20**	20	26	22	1232N
O-ring, neoprene® (CR)	**40**	**32**	32	41	34	1233N
Silicone (VMQ)	**16**	**10**	10	17	12	1231S
Silicone (VMQ)	**25**	**20**	20	26	22	1232S
Silicone (VMQ)	**40**	**32**	32	41	34	1233S

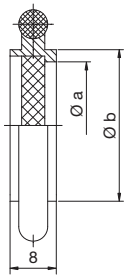
Adapter centring ring, high-grade steel (1.4301)

> Pressure range: 10^{-7}mbar to 2.5 bar
> Temperature range 1.4301: –196 °C to 300 °C

O-ring	Nominal width DN	Nominal width DN1	dia.a [mm]	dia.b [mm]	dia.b1 [mm]	Article no.
Perbunan® (NBR)	**16**	**10**	10	17	12	1241
Perbunan® (NBR)	**25**	**20**	20	26	22	1242
Perbunan® (NBR)	**40**	**32**	32	41	34	1243
Viton® (FKM,FPM)	**16**	**10**	10	17	12	1251
Viton® (FKM,FPM)	**25**	**20**	20	26	22	1252
Viton® (FKM,FPM)	**40**	**32**	32	41	34	1253
EPDM	**16**	**10**	10	17	12	1241E
EPDM	**25**	**20**	20	26	22	1242E
EPDM	**40**	**32**	32	41	34	1243E
O-ring, neoprene® (CR)	**16**	**10**	10	17	12	1241N
O-ring, neoprene® (CR)	**25**	**20**	20	26	22	1242N
O-ring, neoprene® (CR)	**40**	**32**	32	41	34	1243N
Silicone (VMQ)	**16**	**10**	10	17	12	1241S
Silicone (VMQ)	**25**	**20**	20	26	22	1242S
Silicone (VMQ)	**40**	**32**	32	41	34	1243S

Filter centring ring, 0.3 high-grade steel (1.4301)

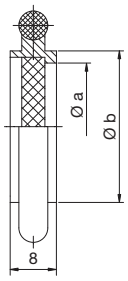
> High-grade steel wire netting, mesh width 0.315 mm
> Pressure range: 10^{-7} mbar to 2.5 bar
> Temperature range 1.4301: –196 °C to 300 °C
> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C



O-ring	Nominal width DN	dia.a [mm]	dia.b [mm]	Article no.
Perbunan® (NBR)	**10**	9	12	1181-3
Perbunan® (NBR)	**16**	14	17	1182-3
Perbunan® (NBR)	**25**	23	26	1184-3
Perbunan® (NBR)	**40**	38	41	1186-3
Perbunan® (NBR)	**50**	49	52	1187-3
Viton® (FKM,FPM)	**10**	9	12	1191-3
Viton® (FKM,FPM)	**16**	14	17	1192-3
Viton® (FKM,FPM)	**25**	23	26	1194-3
Viton® (FKM,FPM)	**40**	38	41	1196-3
Viton® (FKM,FPM)	**50**	49	52	1197-3
EPDM	**10**	9	12	1181-3E
EPDM	**16**	14	17	1182-3E
EPDM	**25**	23	26	1184-3E
EPDM	**40**	38	41	1186-3E
EPDM	**50**	49	52	1187-3E
O-ring, neoprene® (CR)	**10**	9	12	1181-3N
O-ring, neoprene® (CR)	**16**	14	17	1182-3N
O-ring, neoprene® (CR)	**25**	23	26	1184-3N
O-ring, neoprene® (CR)	**40**	38	41	1186-3N
O-ring, neoprene® (CR)	**50**	49	52	1187-3N
Silicone (VMQ)	**10**	9	12	1181-3S
Silicone (VMQ)	**16**	14	17	1182-3S
Silicone (VMQ)	**25**	23	26	1184-3S
Silicone (VMQ)	**40**	38	41	1186-3S
Silicone (VMQ)	**50**	49	52	1187-3S
FFKM	**10**	9	12	1181-3F
FFKM	**16**	14	17	1182-3F
FFKM	**25**	23	26	1184-3F
FFKM	**40**	38	41	1186-3F
FFKM	**50**	49	52	1187-3F

Filter centring ring, 25µ, high-grade steel (1.4301)

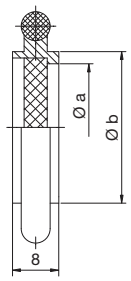
> High-grade steel wire netting, mesh width 0.025 mm
> Pressure range: 10^{-7}mbar to 2.5 bar
> Temperature range 1.4301: –196 °C to 300 °C
> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C



O-ring	Nominal width DN	dia.a [mm]	dia.b [mm]	Article no.
Perbunan® (NBR)	**10**	9	12	1181-25
Perbunan® (NBR)	**16**	14	17	1182-25
Perbunan® (NBR)	**25**	23	26	1184-25
Perbunan® (NBR)	**40**	38	41	1186-25
Perbunan® (NBR)	**50**	49	52	1187-25
Viton® (FKM,FPM)	**10**	9	12	1191-25
Viton® (FKM,FPM)	**16**	14	17	1192-25
Viton® (FKM,FPM)	**25**	23	26	1194-25
Viton® (FKM,FPM)	**40**	38	41	1196-25
Viton® (FKM,FPM)	**50**	49	52	1197-25
EPDM	**10**	9	12	1181-25E
EPDM	**16**	14	17	1182-25E
EPDM	**25**	23	26	1184-25E
EPDM	**40**	38	41	1186-25E
EPDM	**50**	49	52	1187-25E
O-ring, neoprene® (CR)	**10**	9	12	1181-25N
O-ring, neoprene® (CR)	**16**	14	17	1182-25N
O-ring, neoprene® (CR)	**25**	23	26	1184-25N
O-ring, neoprene® (CR)	**40**	38	41	1186-25N
O-ring, neoprene® (CR)	**50**	49	52	1187-25N
Silicone (VMQ)	**10**	9	12	1181-25S
Silicone (VMQ)	**16**	14	17	1182-25S
Silicone (VMQ)	**25**	23	26	1184-25S
Silicone (VMQ)	**40**	38	41	1186-25S
Silicone (VMQ)	**50**	49	52	1187-25S
FFKM	**10**	9	12	1181-25F
FFKM	**16**	14	17	1182-25F
FFKM	**25**	23	26	1184-25F
FFKM	**40**	38	41	1186-25F
FFKM	**50**	49	52	1187-25F

Filter centring ring, 40µ, high-grade steel (1.4301) sintered metal

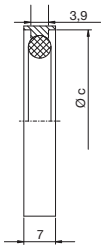
> Sintered metal element, pore width 0.04 mm
> Pressure range: 10^{-7} mbar to 2.5 bar
> Temperature range 1.4301: –196 °C to 300 °C
> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C



O-ring	Nominal width DN	dia.a [mm]	dia.b [mm]	Article no.
Perbunan® (NBR)	**10**	9	8	1181-40
Perbunan® (NBR)	**16**	14	17	1182-40
Perbunan® (NBR)	**25**	23	22	1184-40
Perbunan® (NBR)	**40**	38	36	1186-40
Viton® (FKM,FPM)	**10**	9	8	1191-40
Viton® (FKM,FPM)	**16**	14	17	1192-40
Viton® (FKM,FPM)	**25**	23	22	1194-40
Viton® (FKM,FPM)	**40**	38	36	1196-40
EPDM	**10**	9	8	1181-40E
EPDM	**16**	14	17	1182-40E
EPDM	**25**	23	22	1184-40E
EPDM	**40**	38	36	1186-40E
O-ring, neoprene® (CR)	**10**	9	8	1181-40N
O-ring, neoprene® (CR)	**16**	14	17	1182-40N
O-ring, neoprene® (CR)	**25**	23	22	1184-40N
O-ring, neoprene® (CR)	**40**	38	36	1186-40N
Silicone (VMQ)	**10**	9	8	1181-40S
Silicone (VMQ)	**16**	14	17	1182-40S
Silicone (VMQ)	**25**	23	22	1184-40S
Silicone (VMQ)	**40**	38	36	1186-40S
FFKM	**10**	9	8	1181-40F
FFKM	**16**	14	17	1182-40F
FFKM	**25**	23	22	1184-40F
FFKM	**40**	38	36	1186-40F

Outer centring ring, aluminium (3.1645)

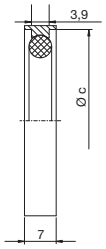
> Pressure range: 10^{-7}mbar to 2.5 bar
> Temperature range for aluminium: –196 °C to 150 °C
> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C



O-ring	Nominal width DN	dia.c [mm]	Article no.
Perbunan® (NBR)	**10/16**	30	1295-2
Perbunan® (NBR)	**20/25**	40	1295-4
Perbunan® (NBR)	**32/40**	55	1295-6
Perbunan® (NBR)	**50**	75	1295-8
Viton® (FKM,FPM)	**10/16**	30	1295-1
Viton® (FKM,FPM)	**20/25**	40	1295-3
Viton® (FKM,FPM)	**32/40**	55	1295-5
Viton® (FKM,FPM)	**50**	75	1295-7
EPDM	**10/16**	30	1295-2E
EPDM	**20/25**	40	1295-4E
EPDM	**32/40**	55	1295-6E
EPDM	**50**	75	1295-8E
O-ring, neoprene® (CR)	**10/16**	30	1295-2N
O-ring, neoprene® (CR)	**20/25**	40	1295-4N
O-ring, neoprene® (CR)	**32/40**	55	1295-6N
O-ring, neoprene® (CR)	**50**	75	1295-8N
Silicone (VMQ)	**10/16**	30	1295-2S
Silicone (VMQ)	**20/25**	40	1295-4S
Silicone (VMQ)	**32/40**	55	1295-6S
Silicone (VMQ)	**50**	75	1295-8S
FFKM	**10/16**	30	1295-2F
FFKM	**20/25**	40	1295-4F
FFKM	**32/40**	55	1295-6F
FFKM	**50**	75	1295-8F

Outer centring ring, polyoxymethylene (POM)

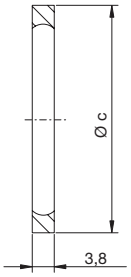
> Pressure range: 10^{-7}mbar to 2.5 bar
> Temperature range for polyoxymethylene: –40 °C to 70 °C
> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C



O-ring	Nominal width DN	dia.c [mm]	Article no.
Perbunan® (NBR)	**10/16**	30	1235-2
Perbunan® (NBR)	**20/25**	40	1235-4
Perbunan® (NBR)	**32/40**	55	1235-6
Viton® (FKM,FPM)	**10/16**	30	1236-2
Viton® (FKM,FPM)	**20/25**	40	1236-4
Viton® (FKM,FPM)	**32/40**	55	1236-6
EPDM	**10/16**	30	1235-2E
EPDM	**20/25**	40	1235-4E
EPDM	**32/40**	55	1235-6E
O-ring, neoprene® (CR)	**10/16**	30	1235-2N
O-ring, neoprene® (CR)	**20/25**	40	1235-4N
O-ring, neoprene® (CR)	**32/40**	55	1235-6N
Silicone (VMQ)	**10/16**	30	1235-2S
Silicone (VMQ)	**20/25**	40	1235-4S
Silicone (VMQ)	**32/40**	55	1235-6S
FFKM	**10/16**	30	1235-2F
FFKM	**20/25**	40	1235-4F
FFKM	**32/40**	55	1235-6F

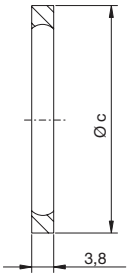
Retaining ring, aluminium (3.1645)

For use with centring ring
> Pressure range: 10^{-7}mbar to 4.0 bar*
> Temperature range: –196 °C to 150 °C*
* Take sealing materials and connecting elements into consideration



Nominal width DN	dia.c [mm]	Article no.
10	29	1261
16	32	1262
20	39	1263
25	42	1264
32	55	1265
40	56	1266
50	70	1267

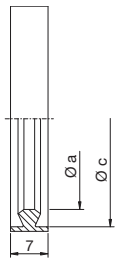
Retaining ring, high-grade steel (1.4301)

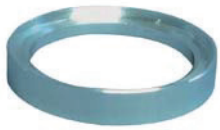


For use with centring ring
> Pressure range: 10^{-7}mbar to 4.0 bar*
> Temperature range: –196 °C to 300 °C*
* Take sealing materials and connecting elements into consideration

Nominal width DN	dia.c [mm]	Article no.
10	29	1361
16	32	1362
20	39	1363
25	42	1364
32	55	1365
40	56	1366
50	70	1367

Metal searing ring, aluminium (3.2315)

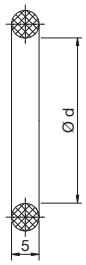




(cutting ring / sharp-edged sealing ring)
> Pressure range: 10^{-7}mbar to 2.5 bar*
> Temperature range: –196 °C to 150 °C*
> No permeation of gases
> Only use with clamping ring for metal seals
> Only suitable for high-grade steel flanges
* Take sealing materials and connecting elements into consideration

Nominal width DN	a [mm]	c [mm]	Article no.
10/16	23	30	1291
20/25	33	40	1292
32/40	48	55	1293
50	68	75	1294

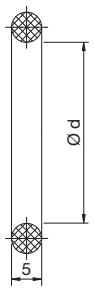
Spare O-ring for centring ring



> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C

O-ring	Nominal width DN	dia.d [mm]	Article no.
Perbunan® (NBR)	**10**	15	1271
Perbunan® (NBR)	**16**	18	1272
Perbunan® (NBR)	**20**	25	1273
Perbunan® (NBR)	**25**	28	1274
Perbunan® (NBR)	**32**	40	1275
Perbunan® (NBR)	**40**	42	1276
Perbunan® (NBR)	**50**	55	1277
Viton® (FKM,FPM)	**10**	15	1281
Viton® (FKM,FPM)	**16**	18	1282
Viton® (FKM,FPM)	**20**	25	1283
Viton® (FKM,FPM)	**25**	28	1284
Viton® (FKM,FPM)	**32**	40	1285
Viton® (FKM,FPM)	**40**	42	1286
Viton® (FKM,FPM)	**50**	55	1287
EPDM	**10**	15	1271E
EPDM	**16**	18	1272E
EPDM	**25**	28	1274E
EPDM	**40**	42	1276E
EPDM	**50**	55	1277E
Neoprene® (CR)	**10**	15	1271N
Neoprene® (CR)	**16**	18	1272N
Neoprene® (CR)	**25**	28	1274N
Neoprene® (CR)	**40**	42	1276N
Neoprene® (CR)	**50**	55	1277N
Silicone (VMQ)	**10**	15	1271S
Silicone (VMQ)	**16**	18	1272S
Silicone (VMQ)	**25**	28	1274S
Silicone (VMQ)	**40**	42	1276S
Silicone (VMQ)	**50**	55	1277S
FFKM	**10**	15	1271F
FFKM	**16**	18	1272F
FFKM	**25**	28	1274F
FFKM	**40**	42	1276F
FFKM	**50**	55	1277F

Spare O-ring for adapter centring ring



> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C

O-ring	Nominal width DN	Nominal width DN 1	dia.d [mm]	Article no.
Perbunan® (NBR)	**16**	**10**	18	1272
Perbunan® (NBR)	**25**	**20**	28	1274
Perbunan® (NBR)	**40**	**32**	42	1276
Viton® (FKM,FPM)	**16**	**10**	18	1282
Viton® (FKM,FPM)	**25**	**20**	28	1284
Viton® (FKM,FPM)	**40**	**32**	42	1286
EPDM	**16**	**10**	18	1272E
EPDM	**25**	**20**	28	1274E
EPDM	**40**	**32**	42	1276E
Neoprene® (CR)	**16**	**10**	18	1272N
Neoprene® (CR)	**25**	**20**	28	1274N
Neoprene® (CR)	**40**	**32**	42	1276N
Silicone (VMQ)	**16**	**10**	18	1272S
Silicone (VMQ)	**25**	**20**	28	1274S
Silicone (VMQ)	**40**	**32**	42	1276S

Flange cap with novotek logo

Nominal width DN	Nominal width DN 1	Article no.
10/16	**10**	1322
20/25	**20**	1324
32/40	**32**	1326
50		1327

Clamping rings, tension chains and claws

Properties:

- temperature range –196 °C to +300 °C
- suitable for high vacuum up to 1x10^{-9}mbar
- simple assembly and disassembly
- maximum pressure 4 bar

Description:

novotek offers five variants of clamping components, whereby specific installation conditions have to be met for each type. The most frequently used clamping component for elastomer seals is the KF clamping ring, consisting of two die-cast aluminium shells and special individual parts made of galvanised steel. A large wing screw is used to achieve the necessary contact force.
If certain installation conditions are met, e.g. small design size, the tension band-clamping ring can be inserted. With KF connections with metal seals, higher and more stable contact pressures much be generated. For this application case, the clamping ring “FL-Massiv” or the tension chain for metal seals must be used.
novotek aluminium claws are required in order to firmly screw flanges onto a component with tapped holes.

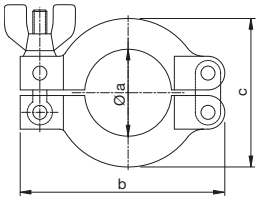
Area of application:

The novotek seal components allow the installation of vacuum attachments for the pressure range of 2500 mbar (4000 mbar in conjunction with an outer retaining ring and a solid tension clip) to 10^{-9}mbar.

Clamping ring, aluminium (3.2982)

(suitable for elastomer seals)

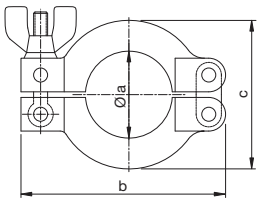
> Pressure range: 10^{-7}mbar to 2.5 bar
> Temperature range for aluminium: –196 °C to 150 °C*
> Tightening torque 2 Nm
* Take sealing materials and connecting elements into consideration



Nominal width DN	Width of clamping ring [mm]	dia.a [mm]	b [mm]	c [mm]	Article no.
10/16	17	22	63	45	1301
20/25	17	32	73	52	1302
32/40	17	47	93	70	1303
50	22	62	114	95	1304

Clamping ring, high-grade steel (1.4301)

(suitable for elastomer seals)

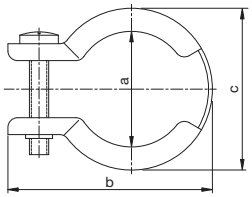


> Pressure range: 10^{-7}mbar to 2.5 bar
> Temperature range: –196 °C to 300 °C*
> Tightening torque 2 Nm
* Take sealing materials and connecting elements into consideration

Nominal width DN	Width of clamping ring [mm]	dia.a [mm]	b [mm]	c [mm]	Article no.
10/16	17	22	63	45	1301VA
20/25	17	32	73	52	1302VA
32/40	17	47	92	70	1303VA
50	22	62	114	95	1304VA

Tension band-clamping ring, high-grade steel (1.4301)

(suitable for elastomer seals)

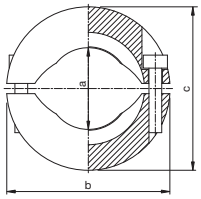


> Pressure range: 10^{-7}mbar to 2.5 bar
> Temperature range: –196 °C to 300 °C*
* Take sealing materials and connecting elements into consideration

Nominal width DN	Width of clamping ring [mm]	dia.a [mm]	b [mm]	c [mm]	Article no.
10/16	16	22	45	36	1311
20/25	16	32	57	46	1312
32/40	16	47	74	61	1313

Clamping ring FL Massiv, high-grade steel (1.4301)

(suitable for metal seals and elastomer seals)

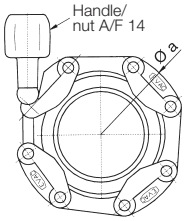


> Pressure range: 10^{-7}mbar to 2.5 bar/4 bar (with outer retaining ring)
> Temperature range: –196 °C to 300 °C*
* Take sealing materials and connecting elements into consideration

Nominal width DN	Width of clamping ring [mm]	dia.a [mm]	b [mm]	c [mm]	Article no.
10/16	18	22	55	47	1341
20/25	18	32	67	57	1342
32/40	18	47	83	71	1343
50	21	64	112	95	1344

Tension roller chain, aluminium/steel

(suitable for metal seals and elastomer seals)

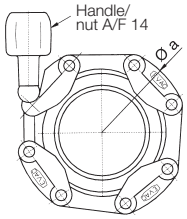


> Pressure range: 10^{-7}mbar to 2.5 bar
> Temperature range: –196 °C to 150 °C*
* Take sealing materials and connecting elements into consideration

Nominal width DN	Width of clamping ring [mm]	dia.a [mm]	Article no.
10/16	20	60	1331
20/25	20	70	1332
32/40	20	85	1333
50	20	105	1334

Tension roller chain, aluminium/steel

(suitable for elastomer seals)

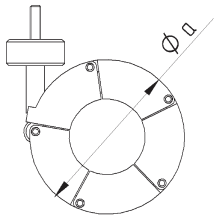


> Pressure range: 10^{-7}mbar to 2.5 bar
> Temperature range: –20 °C to 100 °C*
* Take sealing materials and connecting elements into consideration

Nominal width DN	Width of clamping ring [mm]	dia.a [mm]	Article no.
10/16	20	60	1336
20/25	20	70	1337
32/40	20	85	1338
50	20	105	1339

Tension chain, plastic, max. 60 °C

(suitable for elastomer seals)

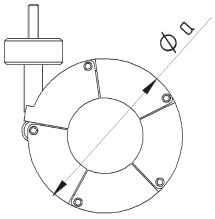


> Dielectric strength 26 kV/mm
> Spec. dielectric resistance 1.0 E12 Ohm x cm
> Pressure range: 10^{-7}mbar to 2.5 bar
> Temperature range: –20 °C to 60 °C*
* Take sealing materials and connecting elements into consideration

Nominal width DN	Width of clamping ring [mm]	dia.a [mm]	Article no.
10/16	18	60	1351
20/25	18	70	1352
32/40	18	85	1353
50	18	105	1354

Tension chain, plastic, max. 100 °C

(suitable for elastomer seals)



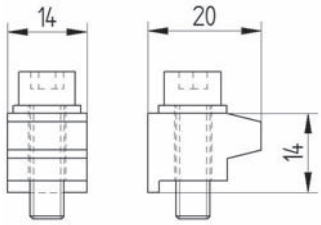
> Dielectric strength 27.5 kV/mm
> Spec. dielectric resistance 1.0 E15 Ohm x cm
> Pressure range: 10^{-7}mbar to 2.5 bar
> Temperature range: –20 °C to 100 °C*

* Take sealing materials and connecting elements into consideration

Nominal width DN	Width of clamping ring [mm]	dia.a [mm]	Article no.
10/16	18	60	1356
20/25	18	70	1357
32/40	18	85	1358
50	18	105	1359

Claw, aluminium (3.3214)

(suitable for elastomer seals)



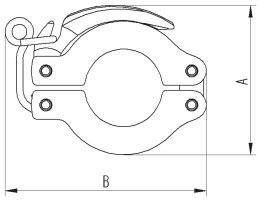
> Pressure range: 10^{-7}mbar to 2.5 bar
> Temperature range: –196 °C to 150 °C*

* Take sealing materials and connecting elements into consideration

Nominal width DN	Width of claw [mm]	Length [mm]	Height [mm]	Article no.
10/16	–	20	14	1371
20/25	14	20	14	1371
32/40	14	20	14	1371
50	14	20	14	1371

Quick-release clamping ring, all-metal

(suitable for elastomer seals)

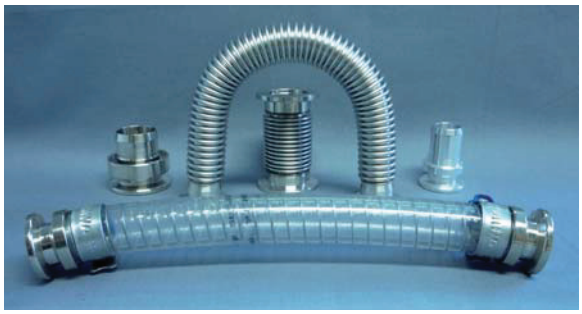


> Pressure range: 10^{-7}mbar to 1.5 bar
> Temperature range: –196 °C to 150 °C*

* Take sealing materials and connecting elements into consideration

Nominal width DN	Width of clamping ring [mm]	dia.A [mm]	dia.B [mm]	Article no.
10/16	16	53	71	1305AL
20/25	16	61	82	1306AL
32/40	18	78	99	1307AL

Metal and PVC hoses, metal spring bellows



Properties:

- temperature range –196 °C to +350 °C
- suitable for high vacuum up to 1x10^{-9}mbar
- metal hose lengths of 5 m and longer are possible

Description:

The novotek metal hoses are circular corrugated all-metal hoses. The profiling on the corrugation determines the elastic pliability and compressive resistance. The typical KF connections are welded onto the metal hoses. To eliminate temper colours and clean the weld seam, in a special vacuum annealing procedure the hoses are baked-out at approx. 1040 °C under forming gas. In this process, the metal hose is simultaneously soft-annealed and thus receives its extremely flexibility property.

The novotek metal spring bellows are corrugated metal bellows. The corrugated sections that run concentrically and parallel to one another give the metal spring bellows axial, angular and lateral mobility, whereby combinations of this are also possible. Metal spring bellows are not annealed.

Area of application:

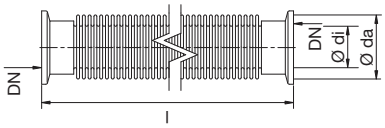
The novotek metal hose connections and metal spring bellows can be used as a mobile vacuum line. If they are used, ensure that the metal hoses can only execute bending movements in a lateral direction. Dynamic axial movements, i.e. buckling or pulling apart both in axial direction as well as torsional movements can only be executed by metal spring bellows.

High-grade steel hose, extremely flexible with KF 1.4301

(Flange 1.4301 / Bellows 1.4404)

> Extremely flexible thanks to soft annealing
> Pressure range: 10^{-9}mbar
> Temperature range: –196 °C to 300 °C*

* Take sealing materials and connecting elements into consideration



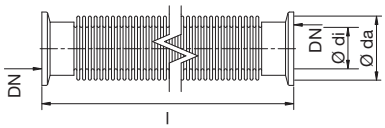
Nominal width DN	Total length [mm]	dia.di [mm]	dia.da [mm]	One-time movement radius R_{st} [mm]	Frequent movement radius R_b [mm]	Maximum pressure [bar]	Article no.
10	250	10.2	16.2	17	90	2.5	1901
16	250	16.2	22.8	26	140	2.5	1902
20	250	20.0	27.0	32	160	2.5	1903
25	250	25.5	33.0	38	180	2.5	1904
32	250	31.8	42.0	47	210	2.5	1905
40	250	40.1	52.0	59	240	1.8	1906
50	250	50.4	63.0	72	280	1.8	1907
10	500	10.2	16.2	17	90	2.5	1911
16	500	16.2	22.8	26	140	2.5	1912
20	500	20.0	27.0	32	160	2.5	1913
25	500	25.5	33.0	38	180	2.5	1914
32	500	31.8	42.0	47	210	2.5	1915
40	500	40.1	52.0	59	240	1.8	1916
50	500	50.4	63.0	72	280	1.8	1917
10	750	10.2	16.2	17	90	2.5	1931
16	750	16.2	22.8	26	140	2.5	1932
20	750	20.0	27.0	32	160	2.5	1933
25	750	25.5	33.0	38	180	2.5	1934
32	750	31.8	42.0	47	210	2.5	1935
40	750	40.1	52.0	59	240	1.8	1936
50	750	50.4	63.0	72	280	1.8	1937
10	1000	10.2	16.2	17	90	2.5	1921
16	1000	16.2	22.8	26	140	2.5	1922
20	1000	20.0	27.0	32	160	2.5	1923
25	1000	25.5	33.0	38	180	2.5	1924
32	1000	31.8	42.0	47	210	2.5	1925
40	1000	40.1	52.0	59	240	1.8	1926
50	1000	50.4	63.0	72	280	1.8	1927
10	1500	10.2	16.2	17	90	2.5	1941
16	1500	16.2	22.8	26	140	2.5	1942
20	1500	20.0	27.0	32	160	2.5	1943
25	1500	25.5	33.0	38	180	2.5	1944
32	1500	31.8	42.0	47	210	2.5	1945
40	1500	40.1	52.0	59	240	1.8	1946
50	1500	50.4	63.0	72	280	1.8	1947
10	2000	10.2	16.2	17	90	2.5	1951
16	2000	16.2	22.8	26	140	2.5	1952
20	2000	20.0	27.0	32	160	2.5	1953
25	2000	25.5	33.0	38	180	2.5	1954
32	2000	31.8	42.0	47	210	2.5	1955
40	2000	40.1	52.0	59	240	1.8	1956
50	2000	50.4	63.0	72	280	1.8	1957

High-grade steel hose, extremely flexible with KF 1.4404

(Flange 1.4404 / Bellows 1.4404)

> Extremely flexible thanks to soft annealing
> Pressure range: 10^{-9}mbar
> Temperature range: –196 °C to 350 °C*

* Take sealing materials and connecting elements into consideration



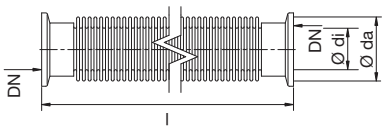
Nominal width DN	Total length [mm]	dia.di [mm]	dia.da [mm]	One-time movement radius R_{st} [mm]	Frequent movement radius R_b [mm]	Maximum pressure [bar]	Article no.
10	250	10.2	16.2	17	90	2.5	19014
16	250	16.2	22.8	26	140	2.5	19024
25	250	25.5	33.0	38	180	2.5	19044
40	250	40.1	52.0	59	240	1.8	19064
50	250	50.4	63.0	72	280	1.8	19074
10	500	10.2	16.2	17	90	2.5	19114
16	500	16.2	22.8	26	140	2.5	19124
25	500	25.5	33.0	38	180	2.5	19144
40	500	40.1	52.0	59	240	1.8	19164
50	500	50.4	63.0	72	280	1.8	19174
10	750	10.2	16.2	17	90	2.5	19314
16	750	16.2	22.8	26	140	2.5	19324
25	750	25.5	33.0	38	180	2.5	19344
40	750	40.1	52.0	59	240	1.8	19364
50	750	50.4	63.0	72	280	1.8	19374
10	1000	10.2	16.2	17	90	2.5	19214
16	1000	16.2	22.8	26	140	2.5	19224
25	1000	25.5	33.0	38	180	2.5	19244
40	1000	40.1	52.0	59	240	1.8	19264
50	1000	50.4	63.0	72	280	1.8	19274
10	1500	10.2	16.2	17	90	2.5	19414
16	1500	16.2	22.8	26	140	2.5	19424
25	1500	25.5	33.0	38	180	2.5	19444
40	1500	40.1	52.0	59	240	1.8	19464
50	1500	50.4	63.0	72	280	1.8	19474
10	2000	10.2	16.2	17	90	2.5	19514
16	2000	16.2	22.8	26	140	2.5	19524
25	2000	25.5	33.0	38	180	2.5	19544
40	2000	40.1	52.0	59	240	1.8	19564
50	2000	50.4	63.0	72	280	1.8	19574

High-grade steel hose, flexible with KF 1.4301

(Flange 1.4301 / Bellows 1.4404)

> Normal version, unannealed
> Pressure range: 10^{-9}mbar
> Temperature range: –196 °C to 300 °C*

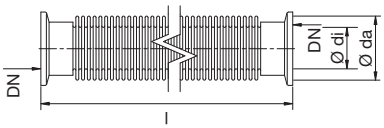
* Take sealing materials and connecting elements into consideration



Nominal width DN	Total length [mm]	dia.di [mm]	dia.da [mm]	One-time movement radius R_{st} [mm]	Frequent movement radius R_b [mm]	Maximum pressure [bar]	Article no.
10	250	10.2	16.2	17	90	2.5	1901U
16	250	16.2	22.8	26	140	2.5	1902U
20	250	20.0	27.0	32	160	2.5	1903U
25	250	25.5	33.0	38	180	2.5	1904U
32	250	31.8	42.0	47	210	2.5	1905U
40	250	40.1	52.0	59	240	1.8	1906U
50	250	50.4	63.0	72	280	1.8	1907U
10	500	10.2	16.2	17	90	2.5	1911U
16	500	16.2	22.8	26	140	2.5	1912U
20	500	20.0	27.0	32	160	2.5	1913U
25	500	25.5	33.0	38	180	2.5	1914U
32	500	31.8	42.0	47	210	2.5	1915U
40	500	40.1	52.0	59	240	1.8	1916U
50	500	50.4	63.0	72	280	1.8	1917U
10	750	10.2	16.2	17	90	2.5	1931U
16	750	16.2	22.8	26	140	2.5	1932U
20	750	20.0	27.0	32	160	2.5	1933U
25	750	25.5	33.0	38	180	2.5	1934U
32	750	31.8	42.0	47	210	2.5	1935U
40	750	40.1	52.0	59	240	1.8	1936U
50	750	50.4	63.0	72	280	1.8	1937U
10	1000	10.2	16.2	17	90	2.5	1921U
16	1000	16.2	22.8	26	140	2.5	1922U
20	1000	20.0	27.0	32	160	2.5	1923U
25	1000	25.5	33.0	38	180	2.5	1924U
32	1000	31.8	42.0	47	210	2.5	1925U
40	1000	40.1	52.0	59	240	1.8	1926U
50	1000	50.4	63.0	72	280	1.8	1927U
10	1500	10.2	16.2	17	90	2.5	1941U
16	1500	16.2	22.8	26	140	2.5	1942U
20	1500	20.0	27.0	32	160	2.5	1943U
25	1500	25.5	33.0	38	180	2.5	1944U
32	1500	31.8	42.0	47	210	2.5	1945U
40	1500	40.1	52.0	59	240	1.8	1946U
50	1500	50.4	63.0	72	280	1.8	1947U
10	2000	10.2	16.2	17	90	2.5	1951U
16	2000	16.2	22.8	26	140	2.5	1952U
20	2000	20.0	27.0	32	160	2.5	1953U
25	2000	25.5	33.0	38	180	2.5	1954U
32	2000	31.8	42.0	47	210	2.5	1955U
40	2000	40.1	52.0	59	240	1.8	1956U
50	2000	50.4	63.0	72	280	1.8	1957U

High-grade steel hose, flexible with KF 1.4404

(Flange 1.4404 / Bellows 1.4404)
> Normal version, unannealed
> Pressure range: 10^{-9}mbar
> Temperature range: –196 °C to 350 °C*
* Take sealing materials and connecting elements into consideration

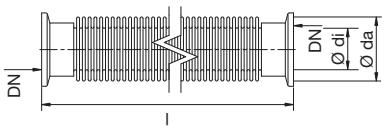


Nominal width DN	Total length [mm]	dia.di [mm]	dia.da [mm]	One-time movement radius R_{st} [mm]	HH frequent movement radius R_b [mm]	Maximum pressure [bar]	Article no.
10	250	10.2	16.2	17	90	2.5	1901U4
16	250	16.2	22.8	26	140	2.5	1902U4
25	250	25.5	33.0	38	180	2.5	1904U4
40	250	40.1	52.0	59	240	1.8	1906U4
50	250	50.4	63.0	72	280	1.8	1907U4
10	500	10.2	16.2	17	90	2.5	1911U4
16	500	16.2	22.8	26	140	2.5	1912U4
25	500	25.5	33.0	38	180	2.5	1914U4
40	500	40.1	52.0	59	240	1.8	1916U4
50	500	50.4	63.0	72	280	1.8	1917U4
10	750	10.2	16.2	17	90	2.5	1931U4
16	750	16.2	22.8	26	140	2.5	1932U4
25	750	25.5	33.0	38	180	2.5	1934U4
40	750	40.1	52.0	59	240	1.8	1936U4
50	750	50.4	63.0	72	280	1.8	1937U4
10	1000	10.2	16.2	17	90	2.5	1921U4
16	1000	16.2	22.8	26	140	2.5	1922U4
25	1000	25.5	33.0	38	180	2.5	1924U4
40	1000	40.1	52.0	59	240	1.8	1926U4
50	1000	50.4	63.0	72	280	1.8	1927U4
10	1500	10.2	16.2	17	90	2.5	1941U4
16	1500	16.2	22.8	26	140	2.5	1942U4
25	1500	25.5	33.0	38	180	2.5	1944U4
40	1500	40.1	52.0	59	240	1.8	1946U4
50	1500	50.4	63.0	72	280	1.8	1947U4
10	2000	10.2	16.2	17	90	2.5	1951U4
16	2000	16.2	22.8	26	140	2.5	1952U4
25	2000	25.5	33.0	38	180	2.5	1954U4
40	2000	40.1	52.0	59	240	1.8	1956U4
50	2000	50.4	63.0	72	280	1.8	1957U4

High-grade steel hose, extremely flexible with KF, special length

> Available in lengths of 100 mm to 5000 mm
> When ordering, specify desired length additionally in text form
> Pressure range: 10^{-9}mbar
> Temperature range: –196 °C to 300 °C (1.4301)/350 °C (1.4404)*

* Take sealing materials and connecting elements into consideration



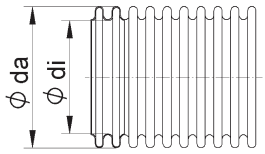
Price example:

High-grade steel hose, extremely flexible 1.4301 NW25 l = 2700 mm contains:	Article no.
High-grade steel hose, extremely flexible, 1.4301 NW25 l=1000 mm	1924
High-grade steel hose, extremely flexible, sold by the metre, 1.7 m	1974 x 1.7
High-grade steel hose, extremely flexible, 1.4301 NW25 l=2700 mm	**1924 x 2.7**

High-grade steel hose without flanges, extremely flexible (annealed), sold by the metre, 1.4404

> Available in lengths of 100 mm to 5000 mm
> When ordering, specify desired length additionally in text form
> Pressure range: 10^{-9}mbar
> Temperature range: –196 °C to 350 °C*

* Take sealing materials and connecting elements into consideration



Nominal width DN	Total length l [mm]	dia.di [mm]	dia.da [mm]	One-time movement radius R_{st} [mm]	Frequent movement radius R_b [mm]	Maximum pressure [bar]	Article no.
7	1000	4.3	7.2	14	90	2.5	1970
10	1000	10.2	16.2	17	90	2.5	1971
12	1000	13	19.3	20	120	2.5	19715
16	1000	16.2	22.8	26	140	2.5	1972
20	1000	20.0	27.0	32	160	2.5	1973
25	1000	25.5	33.0	38	180	2.5	1974
32	1000	31.8	42.0	47	210	2.5	1975
40	1000	40.1	52.0	59	240	1.8	1976
50	1000	50.4	63.0	72	280	1.8	1977

High-grade steel hose without flanges, flexible (unannealed), sold by the metre, 1.4404

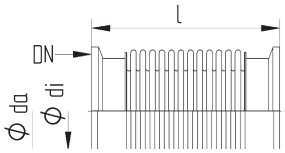
Nominal width DN	Total length l [mm]	dia.di [mm]	dia.da [mm]	One-time movement radius R_{st} [mm]	Frequent movement radius R_b [mm]	Maximum pressure [bar]	Article no.
7	1000	4.3	7.2	14	90	2.5	1970U
10	1000	10.2	16.2	17	90	2.5	1971U
12	1000	13	19.3	20	120	2.5	19715U
16	1000	16.2	22.8	26	140	2.5	1972U
20	1000	20.0	27.0	32	160	2.5	1973U
25	1000	25.5	33.0	38	180	2.5	1974U
32	1000	31.8	42.0	47	210	2.5	1975U
40	1000	40.1	52.0	59	240	1.8	1976U
50	1000	50.4	63.0	72	280	1.8	1977U

Metal spring bellows with KF 1.4301/1.4571

(Flange 1.4301 / Bellows 1.4571)

> Pressure range: 10^{-9}mbar
> 10000 load alternation at 20 °C and 1013 mbar standard air pressure
> Temperature range: –196 °C to 300 °C 1.4301*
> Temperature range: –196 °C to 350 °C 1.4404/1.4571*

* Take sealing materials and connecting elements into consideration



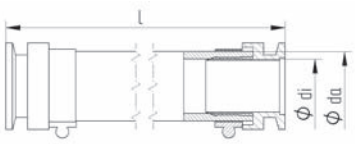
Nominal width DN	Total length [mm]	dia.di [mm]	dia.da [mm]	Negative axial movement [mm]	Article no.
10	60	10	16	5	1991
16	60	15	21	5	1992
25	60	21	32	6	1994
40	120	40	60	15	1996
50	150	40	60	21	1997

Metal spring bellows with KF 1.4404/1.4571

Nominal width DN	Total length [mm]	dia.di [mm]	dia.da [mm]	Negative axial movement [mm]	Article no.
10	60	10	16	5	19914
16	60	15	21	5	19924
25	60	21	32	6	19944
40	120	40	60	15	19964
50	150	40	60	21	19974

PVC hose with KF brass nickel-plated

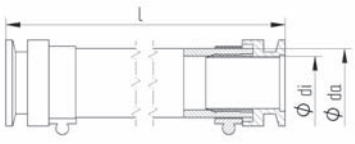
(Brass 2.0401 / MS58)
> PVC hose with inside spring steel spiral
> Pressure range: 10^{-3} mbar to 2.5 bar
> Temperature range: –15 °C to 65 °C*
* Take sealing materials and connecting elements into consideration



Nominal width DN	Total length [mm]	dia.di (inside dia. of hose) [mm]	dia.da (outside dia. of hose) [mm]	Maximum pressure [bar]	Article no.
16/16	500	16	22.2	2.5	2012
25/25	500	25	33	2.0	2014
40/40	500	40	49.6	1.5	2016
50/50	500	50	60.8	1.0	2017
16/16	1000	16	22.2	2.5	2022
25/25	1000	25	33	2.0	2024
40/40	1000	40	49.6	1.5	2026
50/50	1000	50	60.8	1.0	2027

PVC hose with KF, aluminium

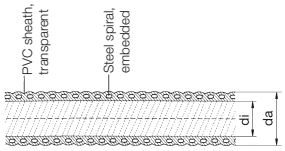
(Aluminium 3.1645)
> PVC hose with inside spring steel spiral
> Pressure range: 10^{-3} mbar to 2.5 bar
> Temperature range: –15 °C to 65 °C*
* Take sealing materials and connecting elements into consideration



Nominal width DN	Total length [mm]	dia.di (inside dia. of hose) [mm]	dia.da (outside dia. of hose) [mm]	Maximum pressure [bar]	Article no.
16/19	500	19	26	2.5	2032
25/25	500	25	33	2.0	2034
40/25	500	25	33	1.5	2036
40/40	500	40	49.6	1.0	2037
16/19	1000	19	26	2.5	2042
25/25	1000	25	33	2.0	2044
40/25	1000	25	33	1.5	2046
40/40	1000	40	49.6	1.0	2047

PVC hose, sold by the metre

> PVC hose with inside spring steel spiral
> Pressure range: 10^{-3} mbar to 2.5 bar
> Temperature range: –15 °C to 65 °C*
* Take sealing materials and connecting elements into consideration

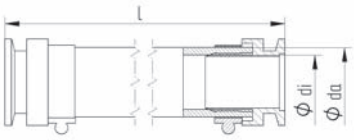


Nominal width DN	Total length [mm]	dia.di (inside dia. of hose) [mm]	dia.da (outside dia. of hose) [mm]	Maximum pressure [bar]	Article no.
16	1000	19	26	2.5	2050
16	1000	16	22.2	2.5	2051
25	1000	25	33	2.0	2052
40	1000	40	49.6	1.5	2053
50	1000	50	60.8	1.0	2054

Other nominal widths upon request!

PVC hose with KF, special length

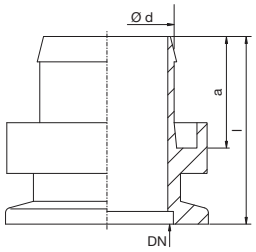
> Available in lengths of 100 mm to 50 000 mm
> PVC hose with inside spring steel spiral
> Pressure range: 10^{-3} mbar to 2.5 bar
> Temperature range: –15 °C to 65 °C*
* Take sealing materials and connecting elements into consideration



Price example:

PVC hose, brass, nickel-plated NW 25 l = 2700 mm contains:	Article no.
PVC hose, brass, nickel-plated NW 25 l = 1000 mm	2024
PVC hose, brass, nickel-plated, sold by the metre 1.7 m	2052 x 1.7
PVC hose, brass, nickel-plated NW 25 l = 2700 mm	**2024 x 2.7**

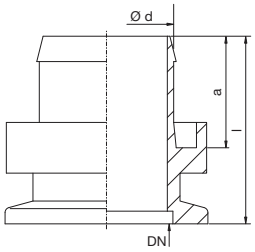
KF joining socket, brass, nickel-plated



(Brass 2.0401 / MS58)
> Pressure range: 10^{-7}mbar to 2.5 bar
> Temperature range: –196 °C to 110 °C*
* Take sealing materials and connecting elements into consideration

Nominal width DN	Hose ID [mm]	d [mm]	l [mm]	a [mm]	Article no.
16/16	16	16.5	28	15	2061
25/25	25	26.5	37	22	2062
40/40	40	40.5	42	29	2063
50/50	50	51.5	63	38	2064

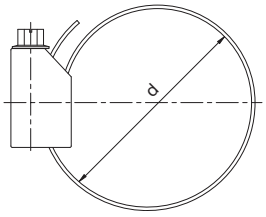
KF joining socket, aluminium



(Aluminium 3.1645)
> Pressure range: 10^{-7}mbar to 2.5 bar
> Temperature range: –196 °C to 150 °C*
* Take sealing materials and connecting elements into consideration

Nominal width DN	Hose ID [mm]	d [mm]	l [mm]	a [mm]	Article no.
16/19	19	20.5	40	24	2066
25/25	25	26.5	40	25	2067
40/25	40	25.5	42	29	2068
40/40	40	40.5	42	29	2069

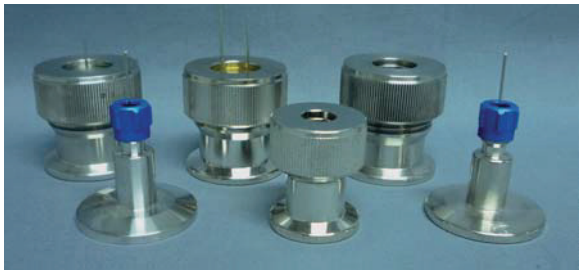
Hose clamps, (steel 1.0037 galvanised)



(for PVC joining socket with KF)

Nominal width DN	d [mm]	Article no.
16	12-22	2071
25	20-32	2072
40	32-40	2073
50	50-70	2074

KF feedthroughs



Properties:

- temperature range –20 °C to +180 °C
- suitable for high vacuum up to 1x10^{-9}mbar
- complete sealing via Viton O-rings
- simple structure

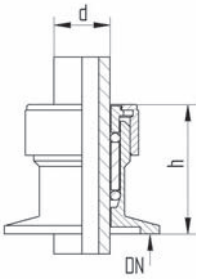
Description:

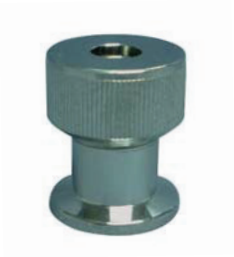
By pressing the O-rings together over the knurled nut or hex nut on the universal thermocouple feedthroughs, we seal off these components between the component and housing.

Area of application:

The novotek KF feedthroughs are used everywhere where cylindrical components with a corresponding surface quality have to be led through vacuum-tight.

KF compression fitting





(High-grade steel 1.4301)

> Pressure range: 10^{-7}mbar to 1.5 bar
> Temperature range: –20 °C to 180 °C
> Additional diameters upon request

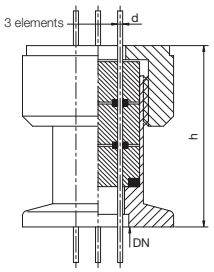
Nominal width DN	dia.d [mm]	h [mm]	Article no.
16	10	37	1731
16	12	37	1732
25	16	39	1733
40	20	45	1734
40	25	45	1735
40	28	45	1736

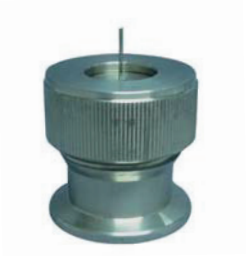
(Brass 2.0401 / MS58)

> Pressure range: 10^{-7}mbar to 1.5 bar
> Temperature range: –20 °C to 110 °C
> Additional diameters upon request

Nominal width DN	dia.d [mm]	h [mm]	Article no.
10	10	37	1721
10	12	37	1722
40	20	45	1724
40	25	45	1725

KF thermocouple feedthroughs 1-fold to 9-fold

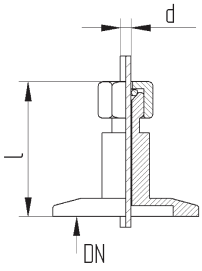




(High-grade steel 1.4301)
> Pressure range: 10^{-7}mbar to 1.5 bar
> Temperature range: –20 °C to 180 °C
> Wire diameter 1.5 mm / **specify diameter in case of deviation**
> Sealing is completely by FKM seals
> Suitable for mantle thermocouples

Nominal width DN	Number of wires	d [mm]	h [mm]	Article no.
10/16	1	1.5 (optional dia.1-9)	37	1751-1
10/16	2	1.5 (optional dia.1-9)	37	1751-2
10/16	3	1.5 (optional dia.1-9)	37	1751-3
25	1	1.5 (optional dia.1-9)	39	1752-1
25	2	1.5 (optional dia.1-9)	39	1752-2
25	3	1.5 (optional dia.1-9)	39	1752-3
25	4	1.5 (optional dia.1-9)	39	1752-4
25	5	1.5 (optional dia.1-9)	39	1752-5
25	6	1.5 (optional dia.1-9)	39	1752-6
25	7	1.5 (optional dia.1-9)	39	1752-7
40	1	1.5 (optional dia.1-9)	45	1753-1
40	2	1.5 (optional dia.1-9)	45	1753-2
40	3	1.5 (optional dia.1-9)	45	1753-3
40	4	1.5 (optional dia.1-9)	45	1753-4
40	5	1.5 (optional dia.1-9)	45	1753-5
40	6	1.5 (optional dia.1-9)	45	1753-6
40	7	1.5 (optional dia.1-9)	45	1753-7
40	8	1.5 (optional dia.1-9)	45	1753-8
40	9	1.5 (optional dia.1-9)	45	1753-9

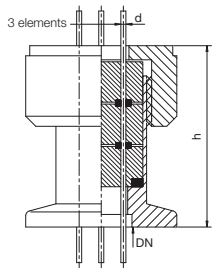
Thermocouple feedthroughs 1-fold universal KF

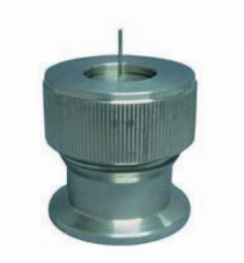


(High-grade steel 1.4301)
> Pressure range: 10^{-7}mbar to 1.5 bar
> **Specify wire diameter when ordering! (Standard 1.5 mm)**
> Temperature range: –20 °C to 180 °C
> Wire diameter 1.0-3.2 mm / additional diameters upon request
> Sealing is completely by FKM seals
> Suitable for mantle thermocouples

Nominal width DN	Number of wires	d [mm]	h [mm]	Article no.
16	1	1.0 / 1.5 / 2 / 2.5 / 3 / 3.2	37	1772
25	1	1.0 / 1.5 / 2 / 2.5 / 3 / 3.2	37	1774
40	1	1.0 / 1.5 / 2 / 2.5 / 3 / 3.2	37	1776

Thermocouple feedthroughs 1-9-fold universal KF

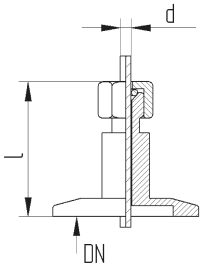




(Brass 2.0401 / MS58, housing nickel-plated)
> Pressure range: 10^{-7}mbar to 1.5 bar
> Temperature range: –20 °C to 110 °C
> Wire diameter 1.5 mm / **specify diameter in case of deviation**
> Sealing is completely by FKM seals
> Suitable for mantle thermocouples

Nominal width DN	Number of wires	d [mm]	h [mm]	Article no.
10	1	1.5 (optional dia.1-9)	37	1741-1
10	2	1.5 (optional dia.1-9)	37	1741-2
10	3	1.5 (optional dia.1-9)	37	1741-3
25	1	1.5 (optional dia.1-9)	39	1742-1
25	2	1.5 (optional dia.1-9)	39	1742-2
25	3	1.5 (optional dia.1-9)	39	1742-3
25	4	1.5 (optional dia.1-9)	39	1742-4
25	5	1.5 (optional dia.1-9)	39	1742-5
25	6	1.5 (optional dia.1-9)	39	1742-6
25	7	1.5 (optional dia.1-9)	39	1742-7
40	1	1.5 (optional dia.1-9)	45	1743-1
40	2	1.5 (optional dia.1-9)	45	1743-2
40	3	1.5 (optional dia.1-9)	45	1743-3
40	4	1.5 (optional dia.1-9)	45	1743-4
40	5	1.5 (optional dia.1-9)	45	1743-5
40	6	1.5 (optional dia.1-9)	45	1743-6
40	7	1.5 (optional dia.1-9)	45	1743-7
40	8	1.5 (optional dia.1-9)	45	1743-8
40	9	1.5 (optional dia.1-9)	45	1743-9

Thermocouple feedthroughs 1-fold universal KF



(Brass 2.0401 / MS58, nickel-plated)
> **Specify wire diameter when ordering! (Standard 1.5 mm)**
> Pressure range: 10^{-7}mbar to 1.5 bar
> Temperature range: –20 °C to 110 °C
> Wire diameter 1.0-3.2 mm / additional diameters upon request
> Sealing is completely by FKM seals
> Suitable for mantle thermocouples

Nominal width DN	Number of wires	d [mm]	h [mm]	Article no.
16	1	1.0 / 1.5 / 2 / 2.5 / 3 / 3.2	37	1762
25	1	1.0 / 1.5 / 2 / 2.5 / 3 / 3.2	37	1764
40	1	1.0 / 1.5 / 2 / 2.5 / 3 / 3.2	37	1766

KF adapter

Properties:

- temperature range –196 °C to +350 °C
- suitable for high vacuum up to 1x10^{-9}mbar

Description:

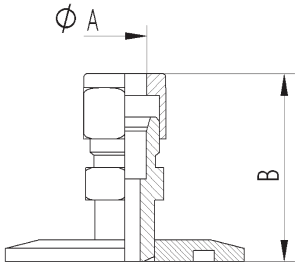
The novotek KF adapters serves as transitions from the KF to various other vacuum-compatible systems.

Area of application:

The novotek KF adapters allow the installation of vacuum attachments for the pressure range of 2500 mbar up to 10^{-9}mbar.

Metric adapter for KF double compression fitting

> Pressure range: 10^{-9} mbar to 2.5 bar
> Temperature range.4301: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
* Take sealing materials and connecting elements into consideration



1.4301 (304) Swagelok®-compatible

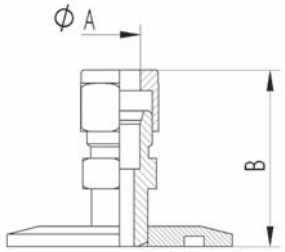
Nominal width DN	A [mm]	B [mm]	Article no.
16	6	40	1821-6
16	8	41	1821-8
16	10	44	1821-10
16	12	46	1821-12
20/25	6	40	1824-6
20/25	8	41	1824-8
20/25	10	44	1824-10
20/25	12	46	1824-12
32/40	6	40	1826-6
32/40	8	41	1826-8
32/40	10	44	1826-10
32/40	12	46	1826-12
50	6	40	1827-6
50	8	41	1827-8
50	10	44	1827-10
50	12	46	1827-12

1.4404 (316) Swagelok®-compatible

Nominal width DN	A [mm]	B [mm]	Article no.
16	6	40	1821-6-4
16	8	41	1821-8-4
16	10	44	1821-10-4
16	12	46	1821-12-4
20/25	6	40	1824-6-4
20/25	8	41	1824-8-4
20/25	10	44	1824-10-4
20/25	12	46	1824-12-4
32/40	6	40	1826-6-4
32/40	8	41	1826-8-4
32/40	10	44	1826-10-4
32/40	12	46	1826-12-4
50	6	40	1827-6-4
50	8	41	1827-8-4
50	10	44	1827-10-4
50	12	46	1827-12-4

Imperial adapter for KF double compression fitting

> Pressure range: 10^{-9} mbar to 2.5 bar
> Temperature range 1.4301: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
* Take sealing materials and connecting elements into consideration



1.4301 (304) Swagelok®-compatible

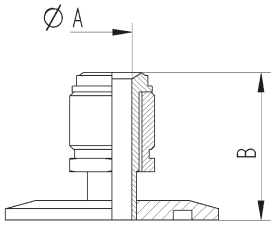
Nominal width DN	A [inches]	B [mm]	Article no.
16	1/4	38	1831-14
16	3/8	42.5	1831-38
16	1/2	46	1831-12
20/25	1/4	38	1834-14
20/25	3/8	40	1834-38
20/25	1/2	44	1834-12
32/40	1/4	38	1836-14
32/40	3/8	40	1836-38
32/40	1/2	44	1836-12
50	1/4	38	1837-14
50	3/8	40	1837-38
50	1/2	45	1837-12

1.4404 (316) Swagelok®-compatible

Nominal width DN	A [inches]	B [mm]	Article no.
16	1/4	38	1831-14-4
16	3/8	42.5	1831-38-4
16	1/2	46	1831-12-4
20/25	1/4	38	1834-14-4
20/25	3/8	40	1834-38-4
20/25	1/2	44	1834-12-4
32/40	1/4	38	1836-14-4
32/40	3/8	40	1836-38-4
32/40	1/2	44	1836-12-4
50	1/4	38	1837-14-4
50	3/8	40	1837-38-4
50	1/2	45	1837-12-4

Imperial HTC® adapter, male, KF

> Pressure range: 10^{-9} mbar to 2.5 bar
> Temperature range 1.4301: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
* Take sealing materials and connecting elements into consideration



1.4301 (304) VCR®-compatible

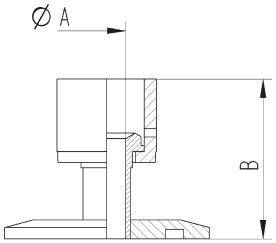
Nominal width DN	A [inches]	B [mm]	Article no.
16	1/4	34	1851-14
16	1/2	39	1851-12
20/25	1/4	34	1854-14
20/25	1/2	39	1854-12
32/40	1/4	34	1856-14
32/40	1/2	39	1856-12
50	1/4	34	1857-14
50	1/2	39	1857-12

1.4404 (316L) VCR®-compatible

Nominal width DN	A [inches]	B [mm]	Article no.
16	1/4	34	1851-14-4
16	1/2	39	1851-12-4
20/25	1/4	34	1854-14-4
20/25	1/2	39	1854-12-4
32/40	1/4	34	1856-14-4
32/40	1/2	39	1856-12-4
50	1/4	34	1857-14-4
50	1/2	39	1857-12-4

Imperial HTC® adapter, female, KF

> Pressure range: 10^{-9} mbar to 2.5 bar
> Temperature range 1.4301: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
* Take sealing materials and connecting elements into consideration



1.4301 (304) VCR®-compatible

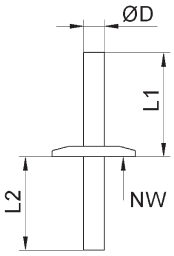
Nominal width DN	A [inches]	B [mm]	Article no.
16	1/4	41	1841-14
16	1/2	45	1841-12
20/25	1/4	41	1844-14
20/25	1/2	42.5	1844-12
32/40	1/4	41	1846-14
32/40	1/2	42.5	1846-12
50	1/4	41	1847-14
50	1/2	42.5	1847-12

1.4404 (316L) VCR®-compatible

Nominal width DN	A [inches]	B [mm]	Article no.
16	1/4	41	1841-14-4
16	1/2	45	1841-12-4
20/25	1/4	41	1844-14-4
20/25	1/2	42.5	1844-12-4
32/40	1/4	41	1846-14-4
32/40	1/2	42.5	1846-12-4
50	1/4	41	1847-14-4
50	1/2	42.5	1847-12-4

Liquid feedthrough, single, KF

> Pressure range: 10^{-9} mbar to 2.5 bar
> Temperature range: –196 °C to 300 °C 1.4301*
> Temperature range: –196 °C to 350 °C 1.4404*
* Take sealing materials and connecting elements into consideration



High-grade steel 1.4301

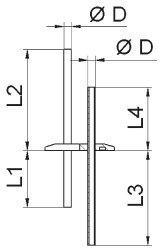
Nominal width DN	dia.D [mm]	L1 [mm]	L2 [mm]	Article no.
16	6	50	45	1862-6
16	10	50	45	1862-10
16	12	50	45	1862-12
20/25	6	50	45	1864-6
20/25	10	50	45	1864-10
20/25	12	50	45	1864-12
32/40	6	50	45	1866-6
32/40	10	50	45	1866-10
32/40	12	50	45	1866-12

High-grade steel 1.4404

Nominal width DN	dia.D [mm]	L1 [mm]	L2 [mm]	Article no.
16	6	50	45	1862-6-4
16	10	50	45	1862-10-4
16	12	50	45	1862-12-4
20/25	6	50	45	1864-6-4
20/25	10	50	45	1864-10-4
20/25	12	50	45	1864-12-4
32/40	6	50	45	1866-6-4
32/40	10	50	45	1866-10-4
32/40	12	50	45	1866-12-4

Liquid feedthrough, double, KF

> Pressure range: 10^{-9} mbar to 2.5 bar
> Temperature range: –196 °C to 300 °C 1.4301*
> Temperature range: –196 °C to 350 °C 1.4404*
* Take sealing materials and connecting elements into consideration



High-grade steel 1.4301

Nominal width	dia.D [mm]	L1 [mm]	L2 [mm]	L3 [mm]	L4 [mm]	Article no.
32/40	6	50	75	80	45	1876-6

High-grade steel 1.4404

Nominal width	dia.D [mm]	L1 [mm]	L2 [mm]	L3 [mm]	L4 [mm]	Article no.
32/40	6	50	75	80	45	1876-6-4

ISO-K clamping flange components

ISO-K clamping flange components and connecting elements

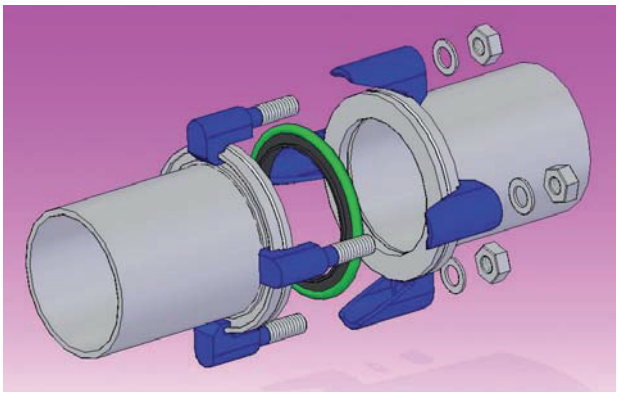
In accordance with DIN 28404 and ISO 1609

Description:

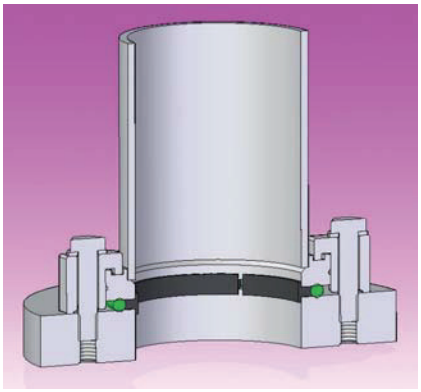
novotek clamping flange components are manufactured in accordance with DIN 28404 and ISO 1609. All components manufactured by novotek are 100% leak-tested and have leak rates better than 10^{-9}mbarl/s. Standard sizes are NW 63 to 320. Nominal widths of up to 630 can be manufactured upon request. ISO-K clamping flange connections are suitable for establishing high-vacuum connection from 10^{-9}mbar to 1.5 bar. Assembly is via screw clamps, claws or a collar flange with snap ring and screws. The clamps, claws or screws must be tightened such that the flanges butt against the centring ring. This requires a considerable increase in torque. Sealing takes place according to the respective requirements via elastomer seals or an aluminium sealing ring. In the case of metal seals, the increased contact forces mean that correspondingly more screw clamps are required (see following table). A collar flange provides a problem-free transition to ISO-F. The transition to KF connections and also CF connections is easily possible using ISO-K/KF or ISO-K/CF adapter pieces.

Please refer to the Materials chapter for operation temperatures, sealing materials and information on the different metals.

Installation variants:



ISO-K flange connection “with screw clamps”



ISO-K flange connection “with claws”

Design features and main dimensions of ISO-K components

Nominal width DN	NW 63	NW 80	NW 100	NW 160	NW 200	NW 250	NW 320	NW 400	NW 500	NW 630
Outside diameter dia.a [mm]	95	110	130	180	240	290	370	450	550	690
Centring ring shoulder dia.b [mm]	70	83	102	153	213	261	318	400	501	651
Flange thickness h [mm]	12	12	12	12	12	12	17	17	17	22
Matching pipe dimension	76x3	88.9x3	108x3	159x3	219x3	273x3	323x3	406x3	508x4	660x5
Free diameter dia.d [mm]	70	83	102	153	213	267	317	400	500	650
Number of screw clamps with elastomer seals	4	4	4	4	6	6	8	8	12	12
Number of screw clamps with metal seals (aluminium)	4	6	8	10	12	14	–	–	–	–
Number of claws or through bolts	4	8	8	8	12	12	12	16	16	20

Design features and main dimensions of collar flanges

Nominal width DN	NW 63	NW 80	NW 100	NW 160	NW 200	NW 250	NW 320	NW 400	NW 500	NW 630
Outside diameter dia.a [mm]	130	145	165	225	285	335	425	510	610	750
Inside diameter dia.b [mm]	95.5	110.5	130.5	180.7	240.7	290.7	370.7	450.7	550.7	690.8
Flange thickness h [mm]	12	12	12	16	16	16	20	20	20	24
Pitch circle dia.c [mm]	110	125	145	200	260	310	395	480	580	720
Number and bore dia. [mm]	9x4	8x9	9x8	11x8	11x8	12x11	12x13.5	16x13.5	16x13.5	20x13.5
Diameter of snap ring [mm]	3	3	3	5	5	5	–	–	–	–

ISO-K junctions

Properties of high-grade steel 1.4301 /1.4404:

- high leak rate (<10^{-9}mbarl/s)
- high conductance
- gap-free welded
- can be baked out up to 300 °C/350 °C

Description:

The novotek ISO-K junctions made of high-grade steel are designed as welded constructions. The welds are made on the inside, which guarantees an absolutely gap-free finish. The flanges that guarantee compatibility are manufactured in accordance with DIN 28404 Form B. This makes a trouble-free connection of all components possible. For the flange dimensions, please refer to the design features at the start of this chapter.

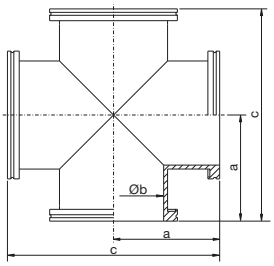
Area of application:

The novotek junctions made of high-grade steel allow the installation of vacuum attachments for the pressure range of 1.5 mbar up to 10^{-9}mbar. They can be used in low, medium and high vacuum technology. The components have a bake-out capacity, are corrosion-resistant and their installation location is as desired.

ISO-K crosspiece

> Pressure range: 10^{-7}mbar to 1.5 bar with elastomer seals
> Pressure range: 10^{-9}mbar to 1.5 bar with metal seals
> Temperature range 1.4301: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
> Clean metallic surfaces on inside and outside.
Polished or glass bead blasted upon request.

* Take sealing materials and connecting elements into consideration

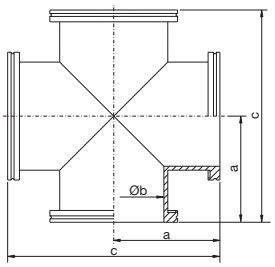


High-grade steel 1.4301

Nominal width DN	a [mm]	dia.b (pipe dimension) [mm]	c [mm]	Article no.
63	88	66 (70x2)	176	6111
100	108	100 (104x2)	216	6112
160	138	153 (159x3)	276	6113
200	178	213 (219x3)	356	6114
250	208	267 (273x3)	416	6115

> Pressure range: 10^{-7}mbar to 1.5 bar with elastomer seals
> Pressure range: 10^{-9}mbar to 1.5 bar with metal seals
> Temperature range 1.4301: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
> Clean metallic surfaces on inside and outside.
Polished or glass bead blasted upon request.

* Take sealing materials and connecting elements into consideration



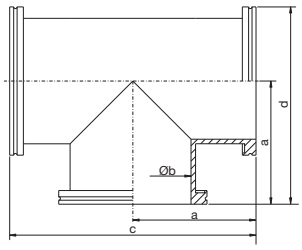
High-grade steel 1.4404

Nominal width DN	a [mm]	dia.b (pipe dimension) [mm]	c [mm]	Article no.
63	88	66 (70x2)	176	61114
100	108	100 (104x2)	216	61124
160	138	153 (159x3)	276	61134
200	178	213 (219x3)	356	61144
250	208	267 (273x3)	416	61154

T piece ISO-K

> Pressure range: 10^{-7}mbar to 1.5 bar with elastomer seals
> Pressure range: 10^{-9}mbar to 1.5 bar with metal seals
> Temperature range 1.4301: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
> Clean metallic surfaces on inside and outside.
Polished or glass bead blasted upon request.

* Take sealing materials and connecting elements into consideration



High-grade steel 1.4301

Nominal width DN	a [mm]	dia.b (pipe dimension) [mm]	c [mm]	d [mm]	Article no.
63	88	66 (70x2)	176	135.5	6121
100	108	100 (104x2)	216	173	6122
160	138	153 (159x3)	276	228	6123
200	178	213 (219x3)	356	298	6124
250	208	267 (273x3)	416	353	6125

High-grade steel 1.4404

Nominal width DN	a [mm]	dia.b (pipe dimension) [mm]	c [mm]	d [mm]	Article no.
63	88	66 (70x2)	176	135.5	61214
100	108	100 (104x2)	216	173	61224
160	138	153 (159x3)	276	228	61234
200	178	213 (219x3)	356	298	61244
250	208	267 (273x3)	416	353	61254

> Pressure range: 10^{-7}mbar to 1.5 bar
> Temperature range: –196 °C to 150 °C

* Take sealing materials and connecting elements into consideration

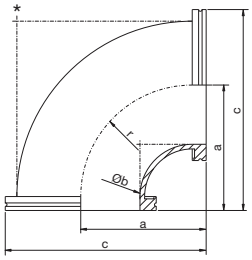
Aluminium 3.2315

Nominal width DN	A [mm]	dia.b (pipe dimension) [mm]	c [mm]	d [mm]	Article no.
63	83	70 (76x3)	166	130.5	6121A
100	111.5	100 (108x4)	225.5	176.5	6122A

Pipe bend/pipe elbow ISO-K

> Pressure range: 10^{-7}mbar to 1.5 bar with elastomer seals
> Pressure range: 10^{-9}mbar to 1.5 bar with metal seals
> Temperature range 1.4301: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
> Clean metallic surfaces on inside and outside.
Polished or glass bead blasted upon request.

* Take sealing materials and connecting elements into consideration



High-grade steel 1.4301

Nominal width DN	a [mm]	dia.b (pipe dimension) [mm]	c [mm]	r [mm]	Article no.
63	88	66 (70x2)	133.5	80	6131
100	108	100 (104x2)	173	100	6132
160	233	150 (154x2)	323	225	6133
160	138	153 (159x3)	228	-	6133w
200	178	213 (219x3)	298	-	6134w
250	208	267 (273x3)	353	-	6135w

High-grade steel 1.4404

Nominal width DN	a [mm]	dia. b (pipe dimension) [mm]	c [mm]	r [mm]	Article no.
63	88	66 (70x2)	133.5	80	61314
100	108	100 (104x2)	173	100	61324
160	233	150 (154x2)	323	225	61334
160	138	153 (159x3)	228	-	6133w4
200	178	213 (219x3)	298	-	6134w4
250	208	267 (273x3)	353	-	6135w4

> Pressure range: 10^{-7}mbar to 1.5 bar
> Temperature range: –196 °C to 150 °C

* Take sealing materials and connecting elements into consideration

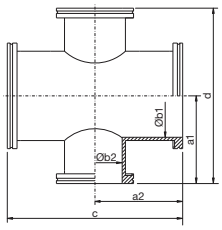
Aluminium 3.2315

Nominal width DN	a [mm]	dia. b (pipe dimension) [mm]	c [mm]	r [mm]	Article no.
63	71	70 (76x3)	118.5	64	6131A
100	108	103 (108x2.5)	173	100.5	6132A
160	158	150 (160x5)	248	150.5	6133A

ISO-K reducing crosspiece

> Pressure range: 10^{-7}mbar to 1.5 bar with elastomer seals
> Pressure range: 10^{-9}mbar to 1.5 bar with metal seals
> Temperature range: –196 °C to 300 °C (1.4301)
> Clean metallic surfaces on inside and outside.
Polished or glass bead blasted upon request.

* Take sealing materials and connecting elements into consideration



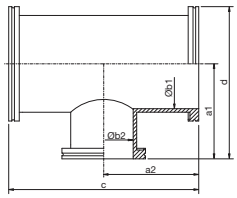
High-grade steel 1.4301

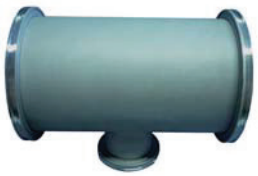
DN	a1 [mm]	b1 [mm]	a2 [mm]	b2 [mm]	c [mm]	d [mm]	Article no.
100/63	107	102	108	70	216	214	6141
160/63	130	153	138	70	276	260	6142
160/100	131	153	138	102	276	262	6143
200/160	168	213	178	153	356	336	6144
250/200	195	261	208	213	416	390	6145
200/100	168	213	178	102	356	336	6146

Reducing T piece ISO-K

> Pressure range: 10^{-7}mbar to 1.5 bar with elastomer seals
> Pressure range: 10^{-9}mbar to 1.5 bar with metal seals
> Temperature range: –196 °C bis 300 °C
> Clean metallic surfaces on inside and outside.
Polished or glass bead blasted upon request.

* Take sealing materials and connecting elements into consideration





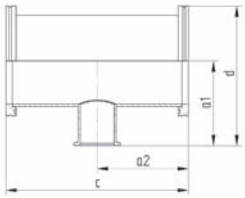
High-grade steel 1.4301

DN	a1 [mm]	b1 [mm]	a2 [mm]	b2 [mm]	c [mm]	d [mm]	Article no.
100/63	107	102	108	70	216	172	6151
160/63	130	153	138	70	276	220	6152
160/100	131	153	138	102	276	221	6153
200/160	168	213	178	153	356	288	6154
250/200	195	261	208	213	416	340	6155
250/160	192	261	208	153	416	282	6156
200/100	161	213	178	102	356	281	6157

Reducing T piece ISO-K/KF

> Pressure range: 10^{-7}mbar to 2.5 bar with elastomer seals
> Pressure range: 10^{-9}mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C

* Take sealing materials and connecting elements into consideration



High-grade steel 1.4301

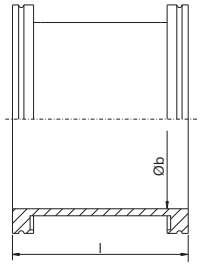
DN	a1 [mm]	b1 [mm]	a2 [mm]	b2 [mm]	c [mm]	d [mm]	Article no.
63/16	75	70	88	15	176	122.5	6310
63/25	75	70	88	25	176	122.5	6311
63/40	75	70	88	37	176	122.5	6312
63/50	75	70	88	49	176	122.5	6313
100/16	100	102	108	15	216	165	6314

100/25	100	102	108	25	216	165	6315
100/40	100	102	108	37	216	165	6316
100/50	100	102	108	49	216	165	6317
160/16	125	153	138	15	276	215	6318
160/25	125	153	138	25	276	215	6319
160/40	125	153	138	37	276	215	6320
160/50	125	153	138	49	276	215	6321

ISO-K connecting piece

> Pressure range: 10^{-7}mbar to 1.5 bar with elastomer seals
> Pressure range: 10^{-9}mbar to 1.5 bar with metal seals
> Temperature range: –196 °C to 300 °C (1.4301)
> Temperature range: –196 °C to 350 °C (1.4404)
> Clean metallic surfaces on inside and outside.
Polished or glass bead blasted upon request.

* Take sealing materials and connecting elements into consideration



High-grade steel 1.4301

Nominal width DN	dia.b [mm]	l [mm]	Article no.
63	70	According to customer request (standard 100 mm)	6171
100	102	According to customer request (standard 100 mm)	6172
160	153	According to customer request (standard 100 mm)	6173
200	213	According to customer request (standard 100 mm)	6174
250	267	According to customer request (standard 100 mm)	6175

High-grade steel 1.4404

Nominal width DN	dia.b [mm]	l [mm]	Article no.
63	70	According to customer request (standard 100 mm)	61714
100	102	According to customer request (standard 100 mm)	61724
160	153	According to customer request (standard 100 mm)	61734
200	213	According to customer request (standard 100 mm)	61744
250	267	According to customer request (standard 100 mm)	61754

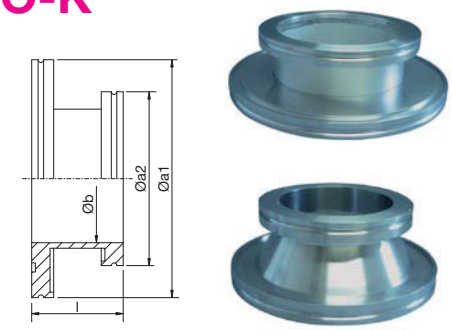
> Pressure range: 10^{-7}mbar to 1.5 bar
> Temperature range: –196 °C to 150 °C

* Take sealing materials and connecting elements into consideration

Aluminium 3.2315

Nominal width DN	dia.b [mm]	l [mm]	Article number.
63	70 (76x3)	According to customer request (standard 100 mm)	6171A
100	102 (108x3)	According to customer request (standard 100 mm)	6172A
160	152 (160x4)	According to customer request (standard 100 mm)	6173A

Reducing fitting straight/conical ISO-K



> Pressure range: 10^{-7}mbar to 1.5 bar with elastomer seals
> Pressure range: 10^{-9}mbar to 1.5 bar with metal seals
> Temperature range: –196 °C to 300 °C (1.4301)
> Temperature range: –196 °C to 350 °C (1.4404)
> Clean metallic surfaces on inside and outside.
Polished or glass bead blasted upon request.

* Take sealing materials and connecting elements into consideration

High-grade steel 1.4301

Nominal width DN	a1 [mm]	a2 [mm]	dia.b [mm]	l [mm]	Article no.
100/63	130	95	70	50	6161
160/63	180	95	70	50	6162
160/100	180	130	102	50	6163
200/63	240	95	70	50	6166
200/100	240	130	102	50	6165
200/160	240	180	153	50	6164
250/63	290	95	70	50	6170
250/100	290	130	102	50	6169
250/160	290	180	153	50	6168
250/200	290	240	213	50	6167
100/63	130	95	conical	50	6161k
160/63	180	95	conical	50	6162k
160/100	180	130	conical	70	6163k

High-grade steel 1.4404

Nominal width DN	a1 [mm]	a2 [mm]	dia.b [mm]	l [mm]	Article no.
100/63	130	95	70	50	61614
160/63	180	95	70	50	61624
160/100	180	130	102	50	61634
200/63	240	95	70	50	61664
200/100	240	130	102	50	61654
200/160	240	180	153	50	61644
250/63	290	95	70	50	61704
250/100	290	130	102	50	61694
250/160	290	180	153	50	61684
250/200	290	240	213	50	61674
100/63	130	95	conical	50	6161k4
160/63	180	95	conical	50	6162k4
160/100	180	130	conical	70	6163k4

> Pressure range: 10^{-7}mbar to 1.5 bar
> Temperature range: –196 °C to 150 °C

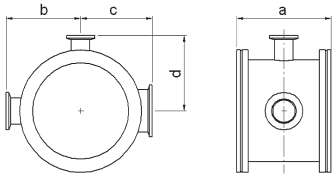
* Take sealing materials and connecting elements into consideration

Aluminium 3.2315

Nominal width DN	a1 [mm]	a2 [mm]	dia.b [mm]	l [mm]	Article no.
100/63	130	95	70	50	6161A
160/63	180	95	70	50	6162A
160/100	180	130	102	50	6163A

Measuring cross ISO-K

> Pressure range: 10^{-7}mbar to 1.5 bar with elastomer seals
> Pressure range: 10^{-9}mbar to 1.5 bar with metal seals
> Outlets respectively 1x KF16, KF25, KF40
> Temperature range: –196 °C to 300 °C (1.4301)
> Temperature range: –196 °C to 350 °C (1.4404)
> Clean metallic surfaces on inside and outside.
Polished or glass bead blasted upon request.
* Take sealing materials and connecting elements into consideration



High-grade steel 1.4301

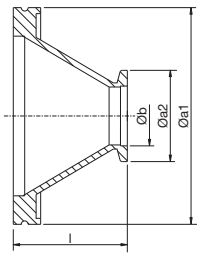
Nominal width DN	a [mm]	b [mm]	c [mm]	d [mm]	Article no.
63	100	64	57	62	6391
100	100	79	76	80	6392
160	100	106	104	105	6393
200	120	136	135	136	6394
250	120	160	159	160	6395

High-grade steel 1.4404

Nominal width DN	a [mm]	b [mm]	c [mm]	d [mm]	Article no.
63	100	64	57	62	63914
100	100	79	76	80	63924
160	100	106	104	105	63934
200	120	136	135	136	63944
250	120	160	159	160	63954

ISO-K/KF conical adapter piece

> Pressure range: 10^{-7}mbar to 1.5 bar with elastomer seals
> Pressure range: 10^{-9}mbar to 1.5 bar with metal seals
> Temperature range: –196 °C to 300 °C (1.4301)
> Temperature range: –196 °C to 150 °C (3.2315)
> Clean metallic surfaces on inside and outside.
Polished or glass bead blasted upon request.
* Take sealing materials and connecting elements into consideration



High-grade steel 1.4301

Nominal width DN	a [mm]	a2 [mm]	b [mm]	l [mm]	Article no.
63/25	95	40	25	50	6181k
63/40	95	55	40	50	6182k
63/50	95	75	50	50	6183k

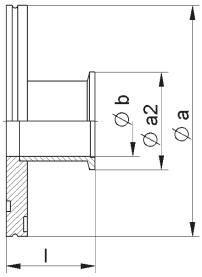
Aluminium 3.2315

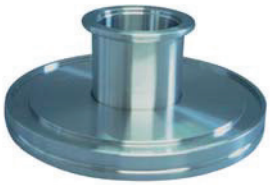
Nominal width DN	a [mm]	a2 [mm]	b [mm]	l [mm]	Article no.
63/25	95	40	25	50	6181kA
63/40	95	55	40	50	6182kA
63/50	95	75	50	50	6183kA

ISO-K/KF adapter piece

> Pressure range: 10^{-7}mbar to 1.5 bar with elastomer seals
> Pressure range: 10^{-9}mbar to 1.5 bar with metal seals
> Temperature range: –196 °C to 300 °C (1.4301)
> Temperature range: –196 °C bis 350 °C (1.4404)
> Clean metallic surfaces on inside and outside.
Polished or glass bead blasted upon request.

* Take sealing materials and connecting elements into consideration





High-grade steel 1.4301

Nominal width DN	a [mm]	a2 [mm]	b [mm]	l [mm]	Article no.
63/16	95	30	16	50	6180
63/25	95	40	25	50	6181
63/40	95	55	40	50	6182
63/50	95	75	50	50	6183
100/16	130	30	16	50	6184
100/25	130	40	25	50	6185
100/40	130	55	40	50	6186
100/50	130	75	50	50	6187
160/25	180	40	25	50	6188
160/40	180	55	40	50	6189
160/50	180	75	50	50	6190
200/25	240	40	25	50	6191
200/40	240	55	40	50	6192
200/50	240	75	50	50	6193
250/40	290	55	40	50	6194
250/50	290	75	50	50	6195

High-grade steel 1.4404

Nominal width DN	a [mm]	a2 [mm]	b [mm]	l [mm]	Article no.
63/16	95	30	16	50	61804
63/25	95	40	25	50	61814
63/40	95	55	40	50	61824
63/50	95	75	50	50	61834
100/16	130	30	16	50	61844
100/25	130	40	25	50	61854
100/40	130	55	40	50	61864
100/50	130	75	50	50	61874
160/25	180	40	25	50	61884
160/40	180	55	40	50	61894
160/50	180	75	50	50	61904
200/25	240	40	25	50	61914
200/40	240	55	40	50	61924
200/50	240	75	50	50	61934
250/40	290	55	40	50	61944
250/50	290	75	50	50	61954

ISO-K components

Properties of high-grade steel 1.4301 /1.4404:

- high leak rate (<10^{-9}mbarl/s)
- high conductance
- gap-free welded
- can be baked out up to 300 °C/350 °C

Description:

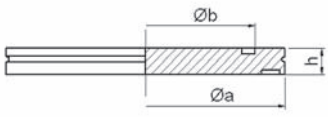
Apart from the ISO-K flanges with a long flanged socket all novotek components in the high-grade steel area are turned from solid material or steel tubing. This guarantees maximum precision and an absolute gap-free finish. The flanges that guarantee compatibility are manufactured in accordance with DIN 28404 Form B. This makes a trouble-free connection of all components possible. For the flange dimensions, please refer to the design features at the start of this chapter.

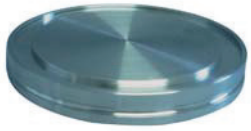
Area of application:

The novotek clamping flange components made of high-grade steel allow the installation of vacuum attachments for the pressure range of 1500 mbar up to 10^{-9}mbar. For aluminium attachments, the pressure range from 1500 mbar to 10^{-7}mbar can be set up. They can be used in low, medium and high vacuum technology. The components have a bake-out capacity, are corrosion-resistant and their installation location is as desired. Compatibility with pipe system in accordance with DIN 11850 is guaranteed.

Blind flange ISO-K

> Pressure range: 10^{-7}mbar to 1.5 bar with elastomer seals
> Pressure range: 10^{-9}mbar to 1.5 bar with metal seals
> Temperature range: –196 °C to 300 °C (1.4301)
> Temperature range: –196 °C to 350 °C (1.4404)
* Take sealing materials and connecting elements into consideration

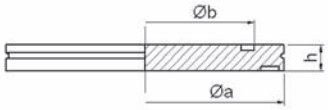


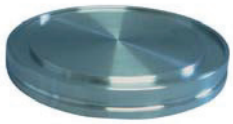


High-grade steel 1.4301

Nominal width DN	a [mm]	b [mm]	h [mm]	Article no.
63	95	70	12	6421
80	110	83	12	64215
100	130	102	12	6422
160	180	153	12	6423
200	240	213	12	6424
250	290	261	12	6425
320	370	318	17	6426

Blind flange ISO-K





High-grade steel 1.4404

Nominal width DN	a [mm]	b [mm]	h [mm]	Article no.
63	95	70	12	64214
80	110	83	12	642154
100	130	102	12	64224
160	180	153	12	64234
200	240	213	12	64244
250	290	261	12	64254
320	370	318	17	64264

> Pressure range: 10^{-7}mbar to 1.5 bar
> Temperature range: –196 °C to 150 °C

* Take sealing materials and connecting elements into consideration

Aluminium 3.2315

Nominal width DN	a [mm]	b [mm]	h [mm]	Article no.
63	95	70	12	6421A
100	130	102	12	6422A
160	180	153	12	6423A

> Pressure range: 10^{-7}mbar to 1.5 bar with elastomer seals
> Pressure range: 10^{-9}mbar to 1.5 bar with metal seals
> Temperature range: –196 °C to 300 °C

* Take sealing materials and connecting elements into consideration

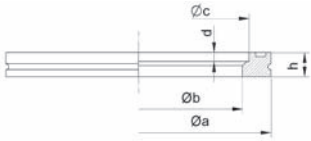
Steel 1.0037

Nominal width DN	a [mm]	b [mm]	h [mm]	Article no.
63	95	70	12	6421St
100	130	102	12	6422St
160	180	153	12	6423St

Welding flange ISO-K

> Pressure range: 10^{-7}mbar to 1.5 bar with elastomer seals
> Pressure range: 10^{-9}mbar to 1.5 bar with metal seals
> Temperature range: –196 °C to 300 °C (1.4301)
> Temperature range: –196 °C to 350 °C (1.4404)

* Take sealing materials and connecting elements into consideration



High-grade steel 1.4301

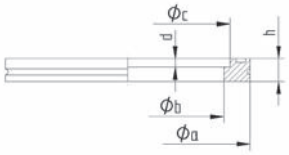
Nominal width DN	dia.a [mm]	dia.b [mm]	dia.c (pipe dimensions) [mm]	d [mm]	h [mm]	Article no.
63	95	70	76.6 (76x3)	4.5	12	6511
63	95	70	70.3 (70x2)	4.5	12	65115
80	110	83	89.3 (88.9x3)	4.5	12	6511-80
100	130	102	108.6 (108x3)	4.5	12	6512
100	130	102	104.6 (104x2)	4.5	12	65125
160	180	153	159.8 (159x3)	4.5	12	6513
160	180	153	154.8 (154x2)	4.5	12	65135
200	240	213	219.8 (219x3)	4.5	12	6514
250	290	261	273.8 (273x3)	4.5	12	6515
320	370	318	324.6 (323.9x3)	7	17	6516

High-grade steel 1.4404

Nominal width DN	dia.a [mm]	dia.b [mm]	dia.c (pipe dimensions) [mm]	d [mm]	h [mm]	Article no.
63	95	70	76.6 (76x3)	4.5	12	65114
63	95	70	70.3 (70x2)	4.5	12	651154
63	95	70	63.8 (63.5x1.65)	4.5	12	65114-IM
80	110	83	89.3 (88.9x3)	4.5	12	65114-80
100	130	102	108.6 (108x3)	4.5	12	65124
100	130	100	104.6 (104x2)	4.5	12	651254
100	130	102	102 (101.6x2.11)	4.5	12	65124-IM
160	180	153	159.8 (159x3)	4.5	12	65134
160	180	153	154.8 (154x2)	4.5	12	651354
160	180	153	153 (152.4x2.77)	4.5	12	65134-IM
200	240	213	219.8 (219x3)	4.5	12	65144
250	290	261	273.8 (273x3)	4.5	12	65154
320	370	318	324.6 (323.9x3)	7	17	65164

Welding flange ISO-K

> Pressure range: 10^{-7}mbar to 1.5 bar
> Temperature range: –196 °C to 150 °C
* Take sealing materials and connecting elements into consideration



Aluminium 3.2315

Nominal width DN	dia.a [mm]	dia.b [mm]	dia.c (pipe dimensions) [mm]	d [mm]	h [mm]	Article no.
63	95	70	76.6 (76x3)	4.5	12	6511A
100	130	102	108.6 (108x3)	4.5	12	6512A
160	180	153	160.8 (160x4)	4.5	12	6513A

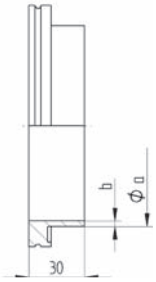
> Pressure range: 10^{-7}mbar to 1.5 bar with elastomer seals
> Pressure range: 10^{-9}mbar to 1.5 bar with metal seals
> Temperature range: –196 °C to 300 °C
* Take sealing materials and connecting elements into consideration

Steel 1.0037

Nominal width DN	dia.a [mm]	dia.b [mm]	dia.c (pipe dimensions) [mm]	d [mm]	h [mm]	Article no.
63	95	70	76.6 (76x3)	4.5	12	6511St
100	130	102	108.6 (108x3)	4.5	12	6512St
160	180	153	159.8 (159x3)	4.5	12	6513St
200	240	213	219.8 (219x3)	4.5	12	6514St
250	290	261	273.8 (273x3)	4.5	12	6515St

ISO-K flange with short flanged socket

> Pressure range: 10^{-7}mbar to 1.5 bar with elastomer seals
> Pressure range: 10^{-9}mbar to 1.5 bar with metal seals
> Temperature range: –196 °C to 300 °C (1.4301)
> Temperature range: –196 °C to 350 °C (1.4404)
* Take sealing materials and connecting elements into consideration



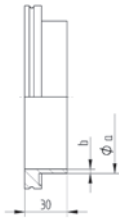
High-grade steel 1.4301

Nominal width DN	dia.a (pipe dimension) [mm]	b [mm]	l [mm]	Article no.
63	76 (76x3)	3	30	6521
100	108 (108x3)	3	30	6522
160	159 (159x3)	3	30	6523
200	219 (219x3)	3	30	6524
250	273 (273x3)	3	30	6525

High-grade steel 1.4404

Nominal width DN	dia.a (pipe dimension) [mm]	b [mm]	l [mm]	Article no.
63	76 (76x3)	3	30	65214
100	108 (108x3)	3	30	65224
160	159 (159x3)	3	30	65234
200	219 (219x3)	3	30	65244
250	273 (273x3)	3	30	65254

ISO-K flange with short flanged socket



> Pressure range: 10^{-7}mbar to 1.5 bar
> Temperature range: –196 °C to 150 °C
* Take sealing materials and connecting elements into consideration

Aluminium 3.2315

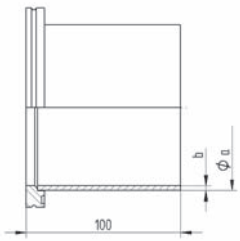
Nominal width DN	dia.a (pipe dimension) [mm]	b [mm]	l [mm]	Article no.
63	76 (76x3)	3	30	6521A
100	108 (108x3)	3	30	6522A
160	160 (160x4)	3	30	6523A

> Pressure range: 10^{-7}mbar to 1.5 bar with elastomer seals
> Pressure range: 10^{-9}mbar to 1.5 bar with metal seals
> Temperature range: –196 °C to 300 °C * Take sealing materials and connecting elements into consideration

Steel 1.0037

Nominal width DN	dia.a (pipe dimension) [mm]	b [mm]	l [mm]	Article no.
63	76 (76x3)	3	30	6521St
100	108 (108x3)	3	30	6522St
160	159 (159x3)	3	30	6523St
200	219 (219x3)	3	30	6524St
250	273 (273x3)	3	30	6525St

ISO-K flange with long flanged socket



> Pressure range: 10^{-7}mbar to 1.5 bar with elastomer seals
> Pressure range: 10^{-9}mbar to 1.5 bar with metal seals
> Temperature range: –196 °C to 300 °C (1.4301)
> Temperature range: –196 °C to 350 °C (1.4404)
* Take sealing materials and connecting elements into consideration

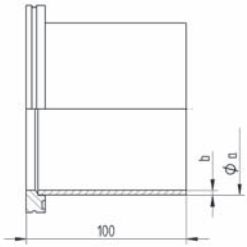
High-grade steel 1.4301

Nominal width DN	dia.a (pipe dimension) [mm]	b [mm]	l [mm]	Article no.
63	76 (76x3)	3	100	6571
100	108 (108x3)	3	100	6572
160	159 (159x3)	3	100	6573
200	219 (219x3)	3	100	6574
250	273 (273x3)	3	100	6575

High-grade steel 1.4404

Nominal width DN	dia.a (pipe dimension) [mm]	b [mm]	l [mm]	Article no.
63	76 (76x3)	3	100	65714
63	63.5 (63.5x1.65)	3	100	65714-IM
100	108 (108x3)	3	100	65724
100	101.6 (101.6x2.11)	3	100	65724-IM
160	159 (159x3)	3	100	65734
200	219 (219x3)	3	100	65744
250	273 (273x3)	3	100	65754

ISO-K flange with long flanged socket



> Pressure range: 10^{-7}mbar to 1.5 bar
> Temperature range: –196 °C to 150 °C
* Take sealing materials and connecting elements into consideration

Aluminium 3.2315

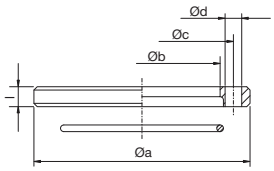
Nominal width DN	dia.a (pipe dimension) [mm]	b [mm]	l [mm]	Article no.
63	76 (76x3)	3	100	6571A
100	108 (108x3)	3	100	6572A
160	160 (160x4)	3	100	6573A

> Pressure range: 10^{-7}mbar to 1.5 bar with elastomer seals
> Pressure range: 10^{-9}mbar to 1.5 bar with metal seals
> Temperature range: –196 °C to 300 °C
* Take sealing materials and connecting elements into consideration

Steel 1.0037

Nominal width DN	dia.a (pipe dimension) [mm]	b [mm]	l [mm]	Article no.
63	76 (76x3)	3	100	6571St
100	108 (108x3)	3	100	6572St
160	159 (159x3)	3	100	6573St
200	219 (219x3)	3	100	6574St
250	273 (273x3)	3	100	6575St

ISO collar flange with snap ring



> Temperature range: –10 °C to 150 °C 1.0037
> Temperature range: –196 °C to 300 °C 1.4301
* Take sealing materials and connecting elements into consideration

Steel 1.0037 nickel-plated

Nominal width DN	dia.a [mm]	dia.b [mm]	dia.c [mm]	dia.d [mm]	l [mm]	Bores	dia. ring [mm]	Article no.
63	130	95.5	110	9	12	4x90°	3	6581
100	165	130.5	145	9	12	8x45°	3	6582
160	225	180.7	200	11	16	8x45°	5	6583
200	285	240.7	260	11	16	12x30°	5	6584
250	335	290.7	310	11	16	12x30°	5	6585

High-grade steel 1.4301

Nominal width DN	dia.a [mm]	dia.b [mm]	dia.c [mm]	dia.d [mm]	l [mm]	Bores	dia. ring [mm]	Article no.
63	130	95.5	110	9	12	4x90°	3	6591
100	165	130.5	145	9	12	8x45°	3	6592
160	225	180.7	200	11	16	8x45°	5	6593
200	285	240.7	260	11	16	12x30°	5	6594
250	335	290.7	310	11	16	12x30°	5	6595

ISO-K hoses and metal spring bellows

Properties of high-grade steel 1.4301 / 1.4404:

- temperature range –196 °C to +350 °C
- suitable for high vacuum up to $1x10^{-9}$mbar
- metal hose lengths of up to 5 m are possible

Description:

The novotek metal hoses are circular corrugated all-metal hoses. The profiling on the corrugation determines the elastic pliability and compressive resistance. The typical clip flange connections are welded onto the metal hoses. To eliminate temper colours and clean the weld seam, in a special vacuum annealing procedure the hoses are baked-out at approx. 1040 °C under forming gas. In this process, the metal hose is simultaneously soft-annealed and thus receives its extremely flexibility property. The flexibility makes smaller bending radii possible.

The novotek metal spring bellows are corrugated metal bellows. The corrugated sections that run concentrically and parallel to one another give the metal spring bellows axial, angular and lateral mobility, whereby combinations of this are also possible. Metal spring bellows are not annealed.

Area of application:

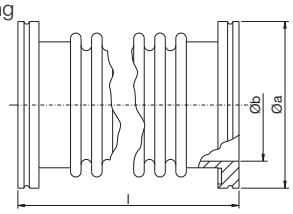
The novotek metal hose connections and metal spring bellows can be used as a mobile vacuum line. If they are used, ensure that the metal hoses can only execute bending movements in a lateral direction. Dynamic axial movements, i.e. buckling or pulling apart both in axial direction as well as torsional movement can only be executed by metal spring bellows.

Important note:

During evacuation of metal hoses as well as metal spring bellows, the air pressure applied from the outside results in a considerable force acting on the flanges, which causes compression. Only the spring power of the hose and bellows counteracts this. It may be necessary to compensate for the forces that develop.

ISO-K corrugated hose with flange, annealed

(**Flange 1.4301. 1.4404 / hose 1.4404**)
> Flexible without annealing / extremely flexible through soft annealing
> Pressure range: 10^{-9}mbar
> Temperature range 1.4301: –196 °C to 300 °C*
> Temperature range 1.4404: –196 °C to 350 °C*
* Take sealing materials and connecting elements into consideration



High-grade steel 1.4301

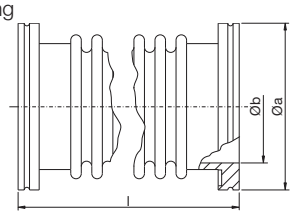
Nominal width DN	Total length l [mm]	dia.a [mm]	dia.b [mm]	One-time movement radius R_{st} [mm]	Frequent movement radius R_b [mm]	Maximum pressure [bar]	Article no.
63	250	80	65	90	330	1.7	6901
100	250	120	100	131	530	1.3	6902
160	250	180	153	216	1050	1.1	6903
63	500	95	70	90	330	1.7	6911
100	500	130	102	131	530	1.3	6912
160	500	180	153	216	1050	1.1	6913
63	750	95	70	90	330	1.7	6931
100	750	130	102	131	530	1.3	6932
160	750	180	153	216	1050	1.1	6933
63	1000	95	70	90	330	1.7	6921
100	1000	130	102	131	530	1.3	6922
160	1000	180	153	216	1050	1.1	6923

High-grade steel 1.4404

Nominal width DN	Total length l [mm]	dia.a [mm]	dia.b [mm]	One-time movement radius R_{st} [mm]	Frequent movement radius R_b [mm]	Maximum pressure [bar]	Article no.
63	250	80	65	90	330	1.7	69014
100	250	120	100	131	530	1.3	69024
160	250	180	153	216	1050	1.1	69034
63	500	95	70	90	330	1.7	69114
100	500	130	102	131	530	1.3	69124
160	500	180	153	216	1050	1.1	69134
63	750	95	70	90	330	1.7	69314
100	750	130	102	131	530	1.3	69324
160	750	180	153	216	1050	1.1	69334
63	1000	95	70	90	330	1.7	69214
100	1000	130	102	131	530	1.3	69224
160	1000	180	153	216	1050	1.1	69234

ISO-K corrugated hose with flange, unannealed

(**Flange 1.4301. 1.4404 / hose 1.4404**)
> Flexible without annealing / extremely flexible through soft annealing
> Pressure range: 10^{-9}mbar
> Temperature range 1.4301: –196 °C to 300 °C*
> Temperature range 1.4404: –196 °C to 350 °C*
* Take sealing materials and connecting elements into consideration



High-grade steel 1.4301

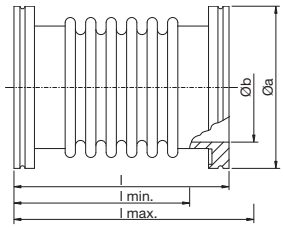
Nominal width DN	Total length l [mm]	dia.a [mm]	dia.b [mm]	One-time movement radius R_{st} [mm]	Frequent movement radius R_b [mm]	Maximum pressure [bar]	Article no.
63	250	80	65	90	330	1.7	6901U
100	250	120	100	131	530	1.3	6902U
160	250	180	153	216	1050	1.1	6903U
63	500	95	70	90	330	1.7	6911U
100	500	130	102	131	530	1.3	6912U
160	500	180	153	216	1050	1.1	6913U
63	750	95	70	90	330	1.7	6931U
100	750	130	102	131	530	1.3	6932U
160	750	180	153	216	1050	1.1	6933U
63	1000	95	70	90	330	1.7	6921U
100	1000	130	102	131	530	1.3	6922U
160	1000	180	153	216	1050	1.1	6923U

High-grade steel 1.4404

Nominal width DN	Total length l [mm]	dia.a [mm]	dia.b [mm]	One-time movement radius R_{st} [mm]	Frequent movement radius R_b [mm]	Maximum pressure [bar]	Article no.
63	250	80	65	90	330	1.7	69014U
100	250	120	100	131	530	1.3	69024U
160	250	180	153	216	1050	1.1	69034U
63	500	95	70	90	330	1.7	69114U
100	500	130	102	131	530	1.3	69124U
160	500	180	153	216	1050	1.1	69134U
63	750	95	70	90	330	1.7	69314U
100	750	130	102	131	530	1.3	69324U
160	750	180	153	216	1050	1.1	69334U
63	1000	95	70	90	330	1.7	69214U
100	1000	130	102	131	530	1.3	69224U
160	1000	180	153	216	1050	1.1	69234U

ISO-K metal spring bellows 304L / 316L

> Pressure range: 10^{-9}mbar
> 10000 load alternation at 20 °C and 1013 mbar standard air pressure
> Temperature range: –196 °C to 300 °C* 1.4301
> Temperature range: –196 °C to 350 °C* 1.4404
* Take sealing materials and connecting elements into consideration



Flange and connection pipe 1.4301 / bellows 1.4571

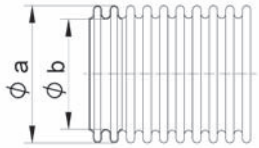
Nominal width DN	dia.a [mm]	dia.b [mm]	Total length l [mm]	Llmin [mm]	Lmax [mm]	Maximum pressure [bar]	Article no.
63	95	70	130	116	140	1.7	6991
100	130	102	130	116	140	1.3	6992
160	180	153	220	170	230	1.1	6993
200	240	213	220	185	230	1.0	6994
250	290	261	220	185	230	1.0	6995

Flange and connection pipe 1.4404 / bellows 1.4571

Nominal width DN	dia.a [mm]	dia.b [mm]	Total length l [mm]	Llmin [mm]	Lmax [mm]	Maximum pressure [bar]	Article no.
63	95	70	130	116	140	1.7	69914
100	130	102	130	116	140	1.3	69924
160	180	153	220	170	230	1.1	69934
200	240	213	220	185	230	1.0	69944
250	290	261	220	185	230	1.0	69954

ISO-K corrugated hose, annealed, sold by the metre 1.4404

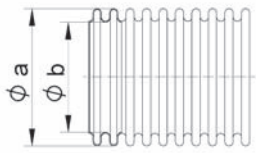
> Available in lengths of 100 mm to 5000 mm
> When ordering, specify desired length additionally in text form
> Pressure range: 10^{-9}mbar
> Temperature range: –196 °C to 350 °C*
* Take sealing materials and connecting elements into consideration



Nominal width DN	Total length l [mm]	dia.a [mm]	dia.b [mm]	One-time movement radius R_{st} [mm]	Frequent movement radius R_b [mm]	Maximum pressure [bar]	Article no.
63	1000	80	65	90	330	1.7	6971
100	1000	120	100	131	530	1.3	6972
160	1000	180	153	216	1050	1.1	6973

ISO-K corrugated hose, unannealed, sold by the metre 1.4404

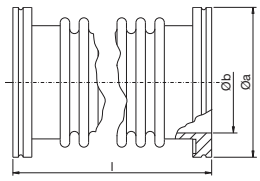
> Available in lengths of 100 mm to 5000 mm
> When ordering, specify desired length additionally in text form
> Pressure range: 10^{-9}mbar
> Temperature range: –196 °C to 350 °C*
* Take sealing materials and connecting elements into consideration



Nominal width DN	Total length l [mm]	dia.a [mm]	dia.b [mm]	One-time movement radius R_{st} [mm]	Frequent movement radius R_b [mm]	Maximum pressure [bar]	Article no.
63	1000	80	65	90	330	1.7	6971U
100	1000	120	100	131	530	1.3	6972U
160	1000	180	153	216	1050	1.1	6973U

Special length ISO-K corrugated hose, annealed with ISO-K flange

> Available in lengths of 100 mm to 5000 mm
> When ordering, specify desired length additionally in text form
> Pressure range: 10^{-9}mbar
> Temperature range: –196 °C to 300 °C(1.4301)/350 °C(1.4404)*
* Take sealing materials and connecting elements into consideration

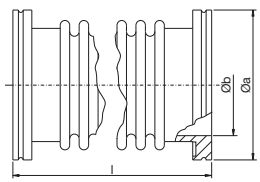


Price example:

High-grade steel hose, extremely flexible 1.4301 NW100 l = 2700 mm contains:	Article no.
High-grade steel hose, extremely flexible 1.4301 ISO-K NW100 l = 1000 mm	6922
High-grade steel hose, extremely flexible ISO-K NW100 sold by the metre 1.7 m	6972x1.7
High-grade steel hose, extremely flexible 1.4301 ISO-K NW100 l = 2700 mm	**6922x2.7**

Special length ISO-K corrugated hose, unannealed with ISO-K flange

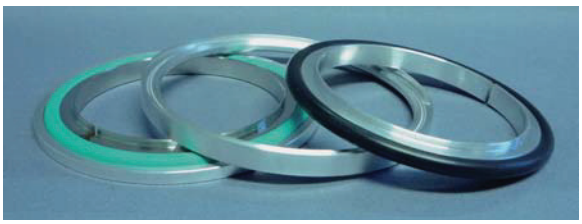
> Available in lengths of 100 mm to 5000 mm
> When ordering, specify desired length additionally in text form
> Pressure range: 10^{-9}mbar
> Temperature range: –196 °C to 300 °C(1.4301)/350 °C(1.4404)*
* Take sealing materials and connecting elements into consideration



Price example:

High-grade steel hose, flexible 1.4301 NW100 l = 2700 mm contains:	Article no.
High-grade steel hose, flexible 1.4301 ISO-K NW100 l = 1000 mm	6922U
High-grade steel hose, flexible ISO-K NW100 sold by the metre 1.7 m	6972Ux1.7
High-grade steel hose, flexible 1.4301 ISO-K NW100 l = 2700 mm	**6922Ux2.7**

ISO-K seal components



Properties:

- temperature range –60 °C to +200 °C
- suitable for high vacuum up to 1x10^{-7} mbar
- combinable depending on application area

Description:

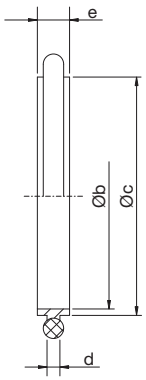
novotek seal components can be selected depending on the technical vacuum requirements, e.g. bake-out capacity, outgassing and corrosion resistance. The O-ring seals used differ with regard to their temperature stability and compatibility with different media. A series of combination options are described under “Materials” at the beginning of our catalogue.

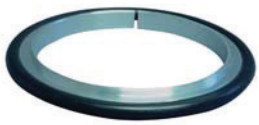
If there are special requirements, e.g. no permeation of gases or long-term high temperature requirements, aluminium sealing rings are used.

Area of application:

The novotek seal components allow the installation of vacuum attachments for the pressure range of 1500 mbar up to 10^{-7}mbar.

ISO-K centring ring, aluminium, without outer ring

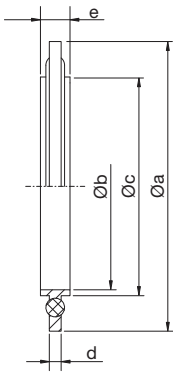




> Pressure range: 10^{-7} mbar to 2.5 bar
> Temperature range for aluminium: –196 °C to 150 °C*
> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C

O-ring	Nominal width DN	dia.b [mm]	dia.c [mm]	d [mm]	e [mm]	Article no.
Perbunan® (NBR)	63	67.5	70	3.9	8	6201
Perbunan® (NBR)	80	80.2	83.2	3.9	8	62015
Perbunan® (NBR)	100	99.5	102	3.9	8	6202
Perbunan® (NBR)	160	150	153	3.9	8	6203
Viton® (FKM,FPM)	63	67.5	70	3.9	8	6211
Viton® (FKM,FPM)	80	80.2	83.2	3.9	8	62115
Viton® (FKM,FPM)	100	99.5	102	3.9	8	6212
Viton® (FKM,FPM)	160	150	153	3.9	8	6213
EPDM	63	67.5	70	3.9	8	6201E
EPDM	100	99.5	102	3.9	8	6202E
EPDM	160	150	153	3.9	8	6203E
Neoprene® (CR)	63	67.5	70	3.9	8	6201N
Neoprene® (CR)	100	99.5	102	3.9	8	6202N
Neoprene® (CR)	160	150	153	3.9	8	6203N
Silicone (VMQ)	63	67.5	70	3.9	8	6201S
Silicone (VMQ)	100	99.5	102	3.9	8	6202S
Silicone (VMQ)	160	150	153	3.9	8	6203S
FFKM	63	67.5	70	3.9	8	6201F
FFKM	100	99.5	102	3.9	8	6202F
FFKM	160	150	153	3.9	8	6203F

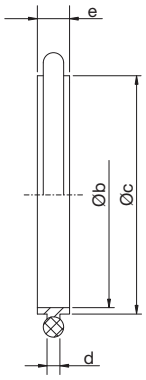
ISO-K centring ring, aluminium, with outer ring



> Pressure range: 10^{-7}mbar to 2.5 bar
> Temperature range for aluminium: –196 °C to 150 °C*
> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C

O-ring	Nominal width DN	dia.a [mm]	dia.b [mm]	dia.c [mm]	d [mm]	e [mm]	Article no.
Perbunan® (NBR)	63	94	67.5	70	3.9	8	6241
Perbunan® (NBR)	80	110	80.2	83.2	3.9	8	62415
Perbunan® (NBR)	100	128	99.5	102	3.9	8	6242
Perbunan® (NBR)	160	179	150	153	3.9	8	6243
Perbunan® (NBR)	200	236	210	213	3.9	8	6244
Perbunan® (NBR)	250	287	258	261	3.9	8	6245
Perbunan® (NBR)	320	358	313	318	5.6	14	6246
Viton® (FKM,FPM)	63	94	67.5	70	3.9	8	6251
Viton® (FKM,FPM)	80	110	80.2	83.2	3.9	8	62515
Viton® (FKM,FPM)	100	128	99.5	102	3.9	8	6252
Viton® (FKM,FPM)	160	179	150	153	3.9	8	6253
Viton® (FKM,FPM)	200	236	210	213	3.9	8	6254
Viton® (FKM,FPM)	250	287	258	261	3.9	8	6255
Viton® (FKM,FPM)	320	358	313	318	5.6	14	6256
EPDM	63	94	67.5	70	3.9	8	6241E
EPDM	100	128	99.5	102	3.9	8	6242E
EPDM	160	179	150	153	3.9	8	6243E
EPDM	200	236	210	213	3.9	8	6244E
EPDM	250	287	258	261	3.9	8	6245E
EPDM	320	358	313	318	5.6	14	6246E
Neoprene® (CR)	63	94	67.5	70	3.9	8	6241N
Neoprene® (CR)	100	128	99.5	102	3.9	8	6242N
Neoprene® (CR)	160	179	150	153	3.9	8	6243N
Neoprene® (CR)	200	236	210	213	3.9	8	6244N
Neoprene® (CR)	250	287	258	261	3.9	8	6245N
Neoprene® (CR)	320	358	313	318	5.6	14	6246N
Silicone (VMQ)	63	94	67.5	70	3.9	8	6241S
Silicone (VMQ)	100	128	99.5	102	3.9	8	6242S
Silicone (VMQ)	160	179	150	153	3.9	8	6243S
Silicone (VMQ)	200	236	210	213	3.9	8	6244S
Silicone (VMQ)	250	287	258	261	3.9	8	6245S
Silicone (VMQ)	320	358	313	318	5.6	14	6246S
FFKM	63	94	67.5	70	3.9	8	6241F
FFKM	100	128	99.5	102	3.9	8	6242F
FFKM	160	179	150	153	3.9	8	6243F

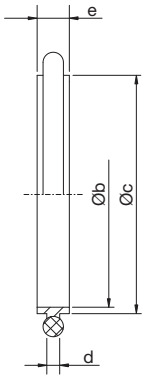
ISO-K centring ring, high-grade steel 1.4301 without outer ring



> Pressure range: 10^{-7} mbar to 2.5 bar
> Temperature range 1.4301: –196 °C to 300 °C
> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C

O-ring	Nominal width DN	dia.b [mm]	dia.c [mm]	d [mm]	e [mm]	Article no.
Perbunan® (NBR)	63	67.5	70	3.9	8	6221
Perbunan® (NBR)	80	80.2	83.2	3.9	8	62215
Perbunan® (NBR)	100	99.5	102	3.9	8	6222
Perbunan® (NBR)	160	150	153	3.9	8	6223
Viton® (FKM,FPM)	63	67.5	70	3.9	8	6231
Viton® (FKM,FPM)	80	80.2	83.2	3.9	8	62315
Viton® (FKM,FPM)	100	99.5	102	3.9	8	6232
Viton® (FKM,FPM)	160	150	153	3.9	8	6233
EPDM	63	67.5	70	3.9	8	6221E
EPDM	100	99.5	102	3.9	8	6222E
EPDM	160	150	153	3.9	8	6223E
Neoprene® (CR)	63	67.5	70	3.9	8	6221N
Neoprene® (CR)	100	99.5	102	3.9	8	6222N
Neoprene® (CR)	160	150	153	3.9	8	6223N
Silicone (VMQ)	63	67.5	70	3.9	8	6221S
Silicone (VMQ)	100	99.5	102	3.9	8	6222S
Silicone (VMQ)	160	150	153	3.9	8	6223S
FFKM	63	67.5	70	3.9	8	6221F
FFKM	100	99.5	102	3.9	8	6222F
FFKM	160	150	153	3.9	8	6223F

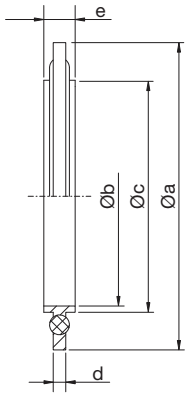
ISO-K centring ring, high-grade steel 1.4404 without outer ring



> Pressure range: 10^{-7}mbar to 2.5 bar
> Temperature range 1.4404: –196 °C to 350 °C
> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C

O-ring	Nominal width DN	dia.b [mm]	dia.c [mm]	d [mm]	e [mm]	Article no.
Perbunan® (NBR)	63	67.5	70	3.9	8	62214
Perbunan® (NBR)	80	80.2	83.2	3.9	8	622145
Perbunan® (NBR)	100	99.5	102	3.9	8	62224
Perbunan® (NBR)	160	150	153	3.9	8	62234
Viton® (FKM,FPM)	63	67.5	70	3.9	8	62314
Viton® (FKM,FPM)	80	80.2	83.2	3.9	8	623145
Viton® (FKM,FPM)	100	99.5	102	3.9	8	62324
Viton® (FKM,FPM)	160	150	153	3.9	8	62334
EPDM	63	67.5	70	3.9	8	62214E
EPDM	100	99.5	102	3.9	8	62224E
EPDM	160	150	153	3.9	8	62234E
Neoprene® (CR)	63	67.5	70	3.9	8	62214N
Neoprene® (CR)	100	99.5	102	3.9	8	62224N
Neoprene® (CR)	160	150	153	3.9	8	62234N
Silicone (VMQ)	63	67.5	70	3.9	8	62214S
Silicone (VMQ)	100	99.5	102	3.9	8	62224S
Silicone (VMQ)	160	150	153	3.9	8	62234S
FFKM	63	67.5	70	3.9	8	62214F
FFKM	100	99.5	102	3.9	8	62224F
FFKM	160	150	153	3.9	8	62234F

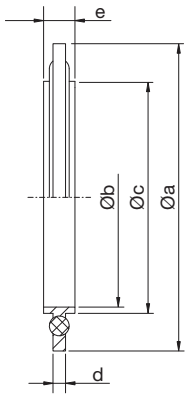
ISO-K centring ring, high-grade steel 1.4301 with outer ring Al



> Pressure range: 10^{-7} mbar to 2.5 bar
> Temperature range 1.4301: –196 °C to 300 °C
> Temperature range for aluminium 3.1645 –196 °C to 150 °C
> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C

O-ring	Nominal width DN	dia.a [mm]	dia.b [mm]	dia.c [mm]	d [mm]	e [mm]	Article no.
Perbunan® (NBR)	63	94	67.5	70	3.9	8	6261
Perbunan® (NBR)	80	110	80.2	83.2	3.9	8	62615
Perbunan® (NBR)	100	128	99.5	102	3.9	8	6262
Perbunan® (NBR)	160	179	150	153	3.9	8	6263
Perbunan® (NBR)	200	236	210	213	3.9	8	6264
Perbunan® (NBR)	250	287	258	261	3.9	8	6265
Perbunan® (NBR)	320	358	313	318	5.6	14	6266
Viton® (FKM,FPM)	63	94	67.5	70	3.9	8	6271
Viton® (FKM,FPM)	80	110	80.2	83.2	3.9	8	62715
Viton® (FKM,FPM)	100	128	99.5	102	3.9	8	6272
Viton® (FKM,FPM)	160	179	150	153	3.9	8	6273
Viton® (FKM,FPM)	200	236	210	213	3.9	8	6274
Viton® (FKM,FPM)	250	287	258	261	3.9	8	6275
Viton® (FKM,FPM)	320	358	313	318	5.6	14	6276
EPDM	63	94	67.5	70	3.9	8	6261E
EPDM	100	128	99.5	102	3.9	8	6262E
EPDM	160	179	150	153	3.9	8	6263E
EPDM	200	236	210	213	3.9	8	6264E
EPDM	250	287	258	261	3.9	8	6265E
EPDM	320	358	313	318	5.6	14	6266E
Neoprene® (CR)	63	94	67.5	70	3.9	8	6261N
Neoprene® (CR)	100	128	99.5	102	3.9	8	6262N
Neoprene® (CR)	160	179	150	153	3.9	8	6263N
Neoprene® (CR)	200	236	210	213	3.9	8	6264N
Neoprene® (CR)	250	287	258	261	3.9	8	6265N
Neoprene® (CR)	320	358	313	318	5.6	14	6266N
Silicone (VMQ)	63	94	67.5	70	3.9	8	6261S
Silicone (VMQ)	100	128	99.5	102	3.9	8	6262S
Silicone (VMQ)	160	179	150	153	3.9	8	6263S
Silicone (VMQ)	200	236	210	213	3.9	8	6264S
Silicone (VMQ)	250	287	258	261	3.9	8	6265S
Silicone (VMQ)	320	358	313	318	5.6	14	6266S
FFKM	63	94	67.5	70	3.9	8	6261F
FFKM	100	128	99.5	102	3.9	8	6262F
FFKM	160	179	150	153	3.9	8	6263F

ISO-K centring ring, high-grade steel 1.4404 with outer ring Al

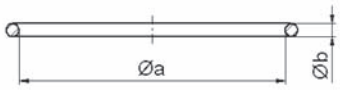


> Pressure range: 10^{-7}mbar to 2.5 bar
> Temperature range 1.4404: –196 °C to 350 °C
> Temperature range for aluminium 3.1645 –196 °C to 150 °C
> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C

O-ring	Nominal width DN	dia.a [mm]	dia.b [mm]	dia.c [mm]	d [mm]	e [mm]	Article no.
Perbunan® (NBR)	63	94	67.5	70	3.9	8	62614
Perbunan® (NBR)	80	110	80.2	83.2	3.9	8	626145
Perbunan® (NBR)	100	128	99.5	102	3.9	8	62624
Perbunan® (NBR)	160	179	150	153	3.9	8	62634
Perbunan® (NBR)	200	236	210	213	3.9	8	62644
Perbunan® (NBR)	250	287	258	261	3.9	8	62654
Perbunan® (NBR)	320	358	313	318	5.6	14	62664
Viton® (FKM,FPM)	63	94	67.5	70	3.9	8	62714
Viton® (FKM,FPM)	80	110	80.2	83.2	3.9	8	627145
Viton® (FKM,FPM)	100	128	99.5	102	3.9	8	62724
Viton® (FKM,FPM)	160	179	150	153	3.9	8	62734
Viton® (FKM,FPM)	200	236	210	213	3.9	8	62744
Viton® (FKM,FPM)	250	287	258	261	3.9	8	62754
Viton® (FKM,FPM)	320	358	313	318	5.6	14	62764
EPDM	63	94	67.5	70	3.9	8	62614E
EPDM	100	128	99.5	102	3.9	8	62624E
EPDM	160	179	150	153	3.9	8	62634E
EPDM	200	236	210	213	3.9	8	62644E
EPDM	250	287	258	261	3.9	8	62654E
EPDM	320	358	313	318	5.6	14	62664E
Neoprene® (CR)	63	94	67.5	70	3.9	8	62614N
Neoprene® (CR)	100	128	99.5	102	3.9	8	62624N
Neoprene® (CR)	160	179	150	153	3.9	8	62634N
Neoprene® (CR)	200	236	210	213	3.9	8	62644N
Neoprene® (CR)	250	287	258	261	3.9	8	62654N
Neoprene® (CR)	320	358	313	318	5.6	14	62664N
Silicone (VMQ)	63	94	67.5	70	3.9	8	62614S
Silicone (VMQ)	100	128	99.5	102	3.9	8	62624S
Silicone (VMQ)	160	179	150	153	3.9	8	62634S
Silicone (VMQ)	200	236	210	213	3.9	8	62644S
Silicone (VMQ)	250	287	258	261	3.9	8	62654S
Silicone (VMQ)	320	358	313	318	5.6	14	62664S
FFKM	63	94	67.5	70	3.9	8	62614F
FFKM	100	128	99.5	102	3.9	8	62624F
FFKM	160	179	150	153	3.9	8	62634F

ISO-K spare O-ring for centring ring

> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C



O-ring	Nominal width DN	dia.a [mm]	dia.b [mm]	Article no.
Perbunan® (NBR)	63	75.6	5.3	6281
Perbunan® (NBR)	80	88.3	5.3	62815
Perbunan® (NBR)	100	107.3	5.3	6282
Perbunan® (NBR)	160	158.3	5.3	6283
Perbunan® (NBR)	200	209.1	5.3	6284
Perbunan® (NBR)	250	253.4	5.3	6285
Viton® (FKM,FPM)	63	75.6	5.3	6286
Viton® (FKM,FPM)	80	88.3	5.3	62865
Viton® (FKM,FPM)	100	107.3	5.3	6287
Viton® (FKM,FPM)	160	158.3	5.3	6288
Viton® (FKM,FPM)	200	209.1	5.3	6289
Viton® (FKM,FPM)	250	253.4	5.3	6290
EPDM	63	75.6	5.3	6281E
EPDM	100	107.3	5.3	6282E
EPDM	160	158.3	5.3	6283E
EPDM	200	209.1	5.3	6284E
EPDM	250	253.4	5.3	6285E
Neoprene® (CR)	63	75.6	5.3	6281N
Neoprene® (CR)	100	107.3	5.3	6282N
Neoprene® (CR)	160	158.3	5.3	6283N
Neoprene® (CR)	200	209.1	5.3	6284N
Neoprene® (CR)	250	253.4	5.3	6285N
Silicone (VMQ)	63	75.6	5.3	6281S
Silicone (VMQ)	100	107.3	5.3	6282S
Silicone (VMQ)	160	158.3	5.3	6283S
Silicone (VMQ)	200	209.1	5.3	6284S
Silicone (VMQ)	250	253.4	5.3	6285S
FFKM	63	75.6	5.3	6281F
FFKM	100	107.3	5.3	6282F
FFKM	160	158.3	5.3	6283F

ISO-K metal sealing ring, aluminium 3.2315 (AlMgSi1)

(Cutting ring / sharp-edged sealing ring / centred on outside)
> Pressure range: 10^{-7} mbar to 1.5 bar*
> Temperature range: –196 °C to 150 °C*
> No permeation of gases
> Only suitable for high-grade steel flanges
> Can only be used once
> Tightening torque approx. 30 – 35 Nm
* Take sealing materials and connecting elements into consideratio

Nominal width DN	dia.a [mm]	dia.b [mm]	c [mm]	d [mm]	Article no.
63	85	97	4.6	7	6291
100	120.5	132	4.6	7	6292
160	170.5	180.5	4.6	7	6293
200	233	240	4.6	7	6294
250	283	290	4.6	7	6295

ISO-K connecting components and accessories

Properties:

- temperature range –196 °C to +300 °C
- suitable for high vacuum up to 1x10^{-9}mbar
- simple assembly and disassembly
- maximum pressure 1.5 bar

Description:

novotek offers various version of connecting elements in nominal widths DN63 to DN500. They are all compatible with high-vacuum components in accordance with DIN 28404.

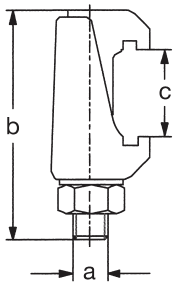
Area of application:

The novotek connecting components allow the installation of vacuum attachments for the pressure range of 1500 mbar up to 10^{-9} mbar.

ISO-K screw clamp

> Pressure range: 10^{-9} mbar to 1.5 bar*
> Temperature range: high-grade steel –196 °C to 300 °C*, steel, galvanized, 0°C to 150 °C
> High-grade steel screw clamps should only be used with thread lubricant.
> Suitable for elastomer seals and metal seals

* Take sealing materials and connecting elements into consideration



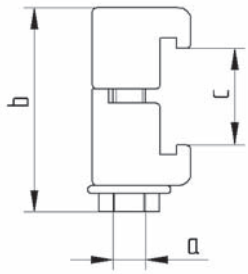
High-grade steel 1.4301

Nominal width DN	Required number	a	b [mm]	c [mm]	Article no.
63/160	4	M10	61	18-30	6005
200/250	6	M10	61	18-30	6005
320/400	8	M12	83	27-37	6006
500	12	M12	83	27-37	6006

Steel, galvanised

Nominal width DN	Required number	a	b [mm]	c [mm]	Article no.
63/160	4	M10	61	18-30	6003
200/250	6	M10	61	18-30	6003
63-160	4	M10	68	26-36	6003L
200/250	6	M10	68	26-36	6003L
320/400	8	M12	87	30-37	6007
500	12	M12	87	30-37	6007
630	14	M12	86	38-47	6009

ISO-K screw clamp

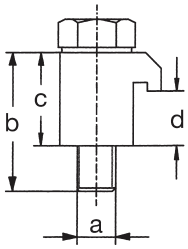


> Pressure range: 10^{-9} mbar to 1.5 bar*
> Temperature range: –196 °C to 200 °C
> Suitable for elastomer seals
* Take sealing materials and connecting elements into consideration

Aluminium 3.3214

Nominal width DN	Required number	a	b [mm]	c [mm]	Article no.
63/100	4	M8	50	23-34	6002
160	4	M10	50	23-34	6004
200/250	6	M10	50	23-34	6004
320/400	8	M12	66	34-52	6008
500	12	M12	66	34-52	6008

ISO-K claw



> Pressure range: 10^{-9} mbar to 1.5 bar*
> Temperature range: high-grade steel –196 °C to 300 °C*, steel, galvanized, 0 °C – 150 °C
> Temperature range for aluminium: –196 °C to 200 °C
> High-grade steel screw clamps should only be used with thread lubricant.
> Suitable for elastomer seals and metal seals
> Pitch circle dia., see ISO collar flanges
* Take sealing materials and connecting elements into consideration

High-grade steel 1.4301

Nominal width DN	Required number	a	b [mm]	c [mm]	d [mm]	Article no.
63	4	M8	35	22.5	13.9	6015
100	8	M8	35	22.5	13.9	6015
160	8	M10	35	23	13.9	6016
200/250	12	M10	35	23	13.9	6016
320/500	12	M12	50	30	20.6	6018

Steel, galvanised

Nominal width DN	Required number	a	b [mm]	c [mm]	d [mm]	Article no.
63	4	M8	35	23	13.9	6011
100	8	M8	35	23	13.9	6011
160	8	M10	35	23	13.9	6012
200/250	12	M10	35	23	13.9	6012
320/500	12	M12	50	30	20.6	6017

Aluminium 3.3214

Nominal width DN	Required number	a	b [mm]	c [mm]	d [mm]	Article no.
63	4	M8	35	23.5	13.5	6013
100	8	M8	35	23.5	13.5	6013
160	8	M10	35	23.5	13.5	6014
200/250	12	M10	35	23.5	13.5	6014
320/500	12	M12	50	30	20.6	6019

ISO-F screw set 1.4301

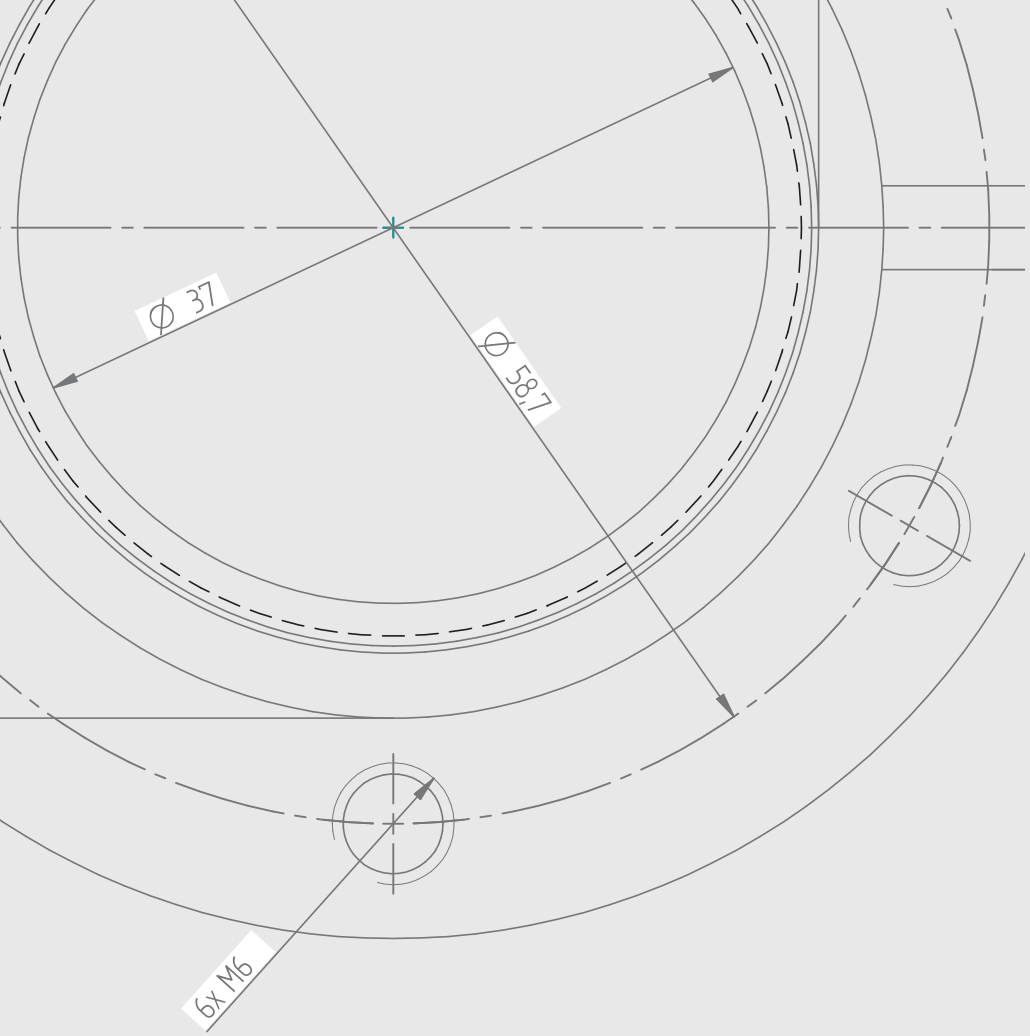
> Pressure range: 10^{-9} mbar to 1.5 bar*
> Temperature range: high-grade steel –196 °C to 300 °C*
> High-grade steel screw clamps should only be used with thread lubricant.
> Suitable for elastomer seals and metal seals

* Take sealing materials and connecting elements into consideration

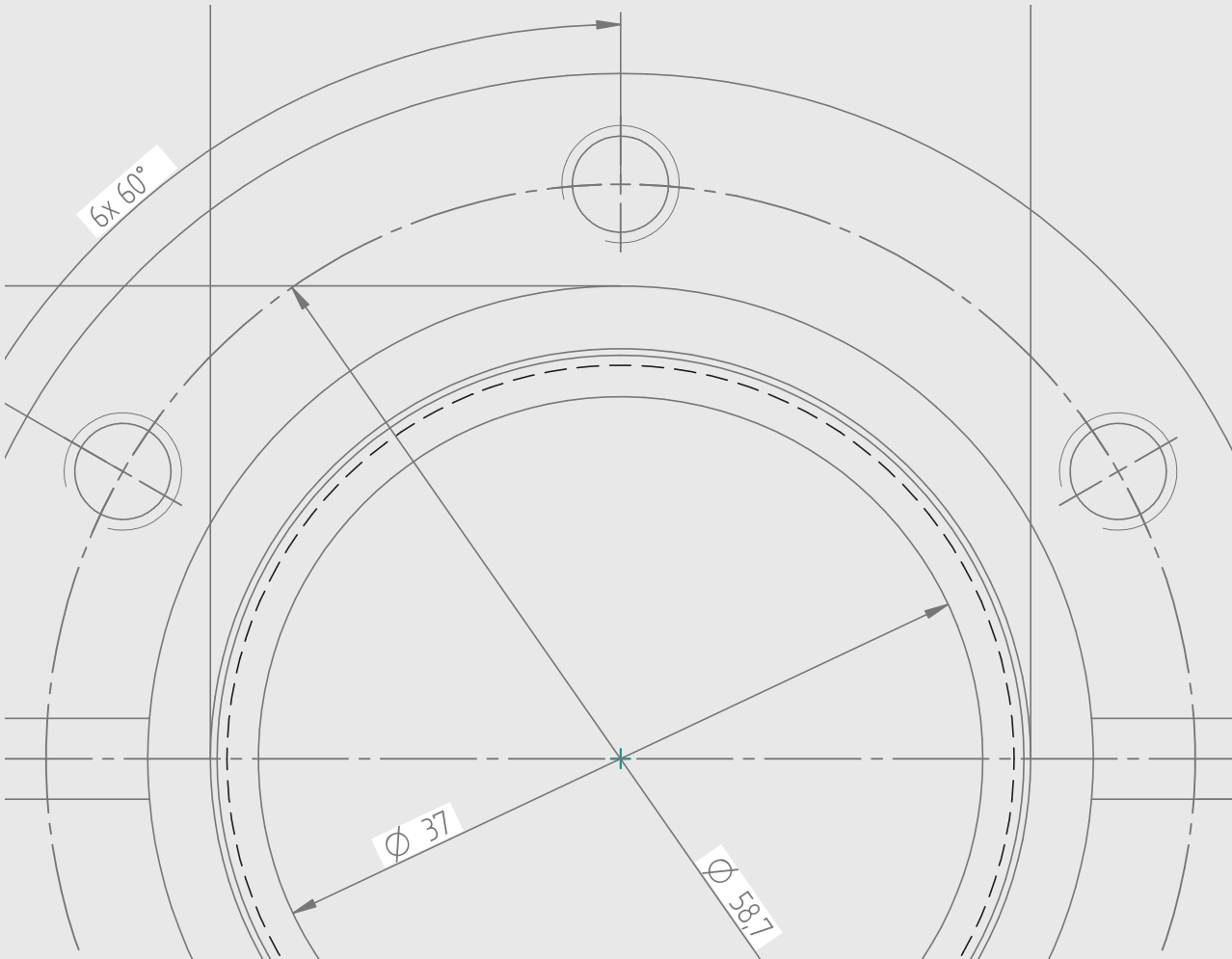
Nominal width DN	Required number	Screw connection	Screw length l [mm]	Article no.
63	4	M8	40	6021
100	8	M8	40	6022
160	8	M10	50	6023
200/250	12	M10	50	6024
320/500	16	M12	65	6025

Flange cap, plastic

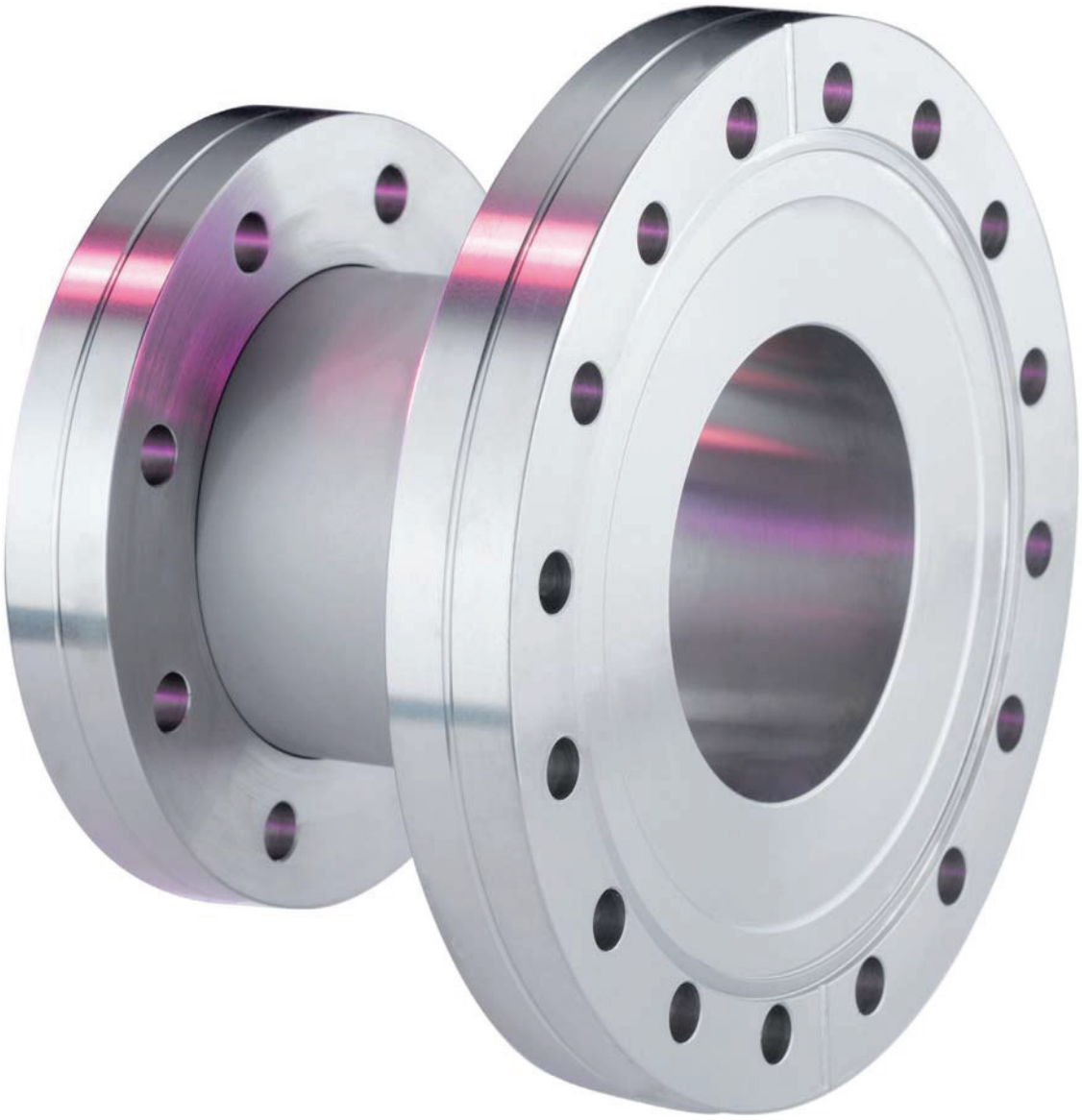
Nominal width DN	Article no.
63	6041
80	60415
100	6042
160	6043
200	6044
250	6045
320	6046



www.novotek.de



CF components and connections



CF flange components and connecting elements As per ISO 3669 (corresponds to ConFlat® flange)

Description:

novotek CF components are manufactured according to ISO 3669. All components manufactured by novotek are 100% leak-tested and have leak rates better than 10^{-10} mbarl/s. Standard sizes are NW 16 to 250. Nominal widths of up to 400 can be manufactured upon request. The ultra high vacuum range (UHV) designates the pressure range $<10^{-8}$mbar. To reach and maintain this low pressure range, a very low outgassing rate is required in the vacuum system. This is achieved by using material with as low a desorption, diffusion and permeation rate as possible and by preventing unventilated cavities and gaps and by using vacuum-compatible cleaning systems. Please refer to the Materials chapter for operation temperatures, sealing materials and information on the different metals.

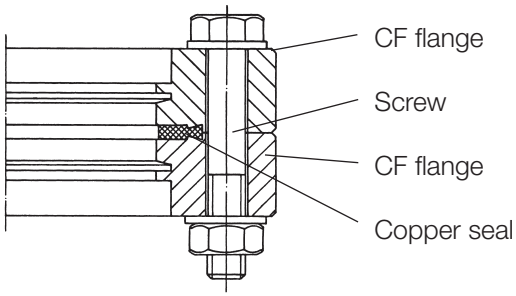
Sealing principle:

The CF connection is sealed off by the cutting edge profile in the flange and a copper sealing washer. The copper sealing washer is inserted in the flange groove and, at the same time, centres the flange pair. When bolting the flanges, the cutting edges of the flanges for sealing are pressed deeply into the soft sealing washer, whereby the metal “flows away” radially and is pressed on the outside against the flange groove and limited. Even in the case of material creeping, this guarantees leak-tightness.

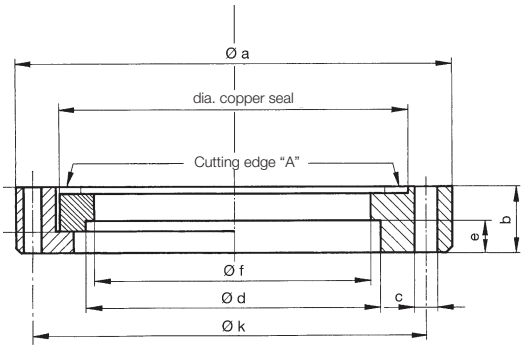
Design features:

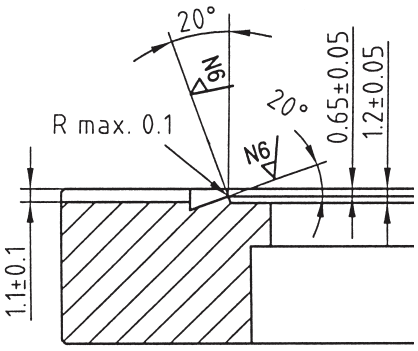
The flanges of the CF components are designed according to ISO 3669. They are compatible with the ConFlat® flanges of other leading manufacturers. Retrofitting in novotek CF systems or systems from other manufacturers is possible. The standard material used is low-carbon high-grade steel with material number 1.4306 (304L). For the most common flanges and components, higher quality high-grade steels 1.4404 (316L) can also be used. The material number for the component can be found in the respective catalogue sections. Due to the bake-out capacity required in UHV technology, sealing of the CF flanges is by means of a flat seal made of oxygen-free (OFHC) copper. The contact pressure is generated by diametrical tightening of the screws. The copper seal can only be used once. When baking out CF connections, ensure that heating up and cooling is carried out uniformly and relatively slowly.

Installation variant, CF flange connection



CF main dimensions + tightening torque





Nominal width DN	dia.a [mm]	dia.f [mm]	Height b [mm]	Flanged socket d [mm]	Pitch circle dia.k [mm]	Bore dia.c [mm]	Number of screws [n]	Immersion depth of flanged socket e [mm]	Tighten-ing torque [Nm]
16	34	16.5	7.6	18.1	27	4.3	6xM4	2.80	4
38	70	35	12.7	38.2	58.7	6.6	6xM6	7.90	10
40	70	37	12.7	40.2	58.7	6.6	6xM6	7.90	10
63	113.5	66	17.5	70.3	92.1	8.4	8xM8	9.40	20
100	152	100.5	19.9	104.3	130.3	8.4	16xM8	10.40	20
160 (150)	203	150.5	22.3	154.5	181	8.4	20xM8	12.80	20
200	254	200.5	24.6	204.5	231.8	8.4	24xM8	15.10	20
250	305	250	25	254.5	284	8.4	32xM8	12.30	20

CF junctions

Properties of high-grade steel 1.4306/1.4404:

- high leak rate (<10^{-10} mbarl/s)
- high conductance
- gap-free welded
- bake-out capacity up to 450 °C
- cleaned in UHV-compatible manner
- special dimensions upon request

Description:

The novotek CF junctions made of high-grade steel are designed as welded constructions. The CF flange are always welded using WIG welding technology gap-free on the inside and vacuum-tight. The surface of NW16 to NW63 is polished on outside and inside, NW100 to NW250 polished on inside, outside matted or glass bead blasted.

Upon special request, the components can also be electropolished prior to delivery.

Area of application:

The novotek CF junctions can be used in systems with pre-, high- and UHV-vacuum.

Materials:

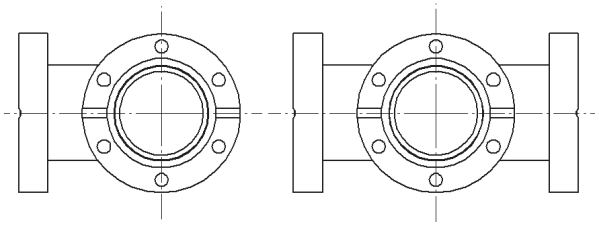
CF welding flanges made of 1.4306 (304L), 1.4404(316L) and pipe components made of 1.4404 (316L) / 1.4571 (316Ti)

Special material such as 1.4429 ESR is available upon request.

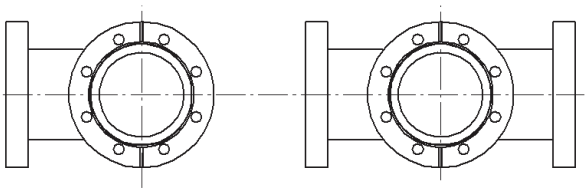
Basic design of pipe components

Hole pitch of components on component axis

CF 16 and CF 40



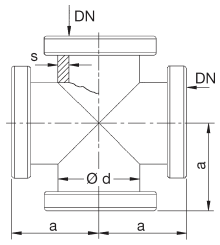
as of CF 63



CF crosspiece flanges, fixed

> Pressure range: 10^{-12} mbar to 1.0 bar
(with a leak rate under helium of $1x10^{-10}$mbarl/s)
> Temperature range: –196 °C to 300 °C 1.4306
> Temperature range: –196 °C to 350 °C 1.4404
> Bake-out capacity up component to 450 °C
> Surface NW16 to NW63 polished on outside and inside, NW100 to NW250 polished on inside, outside matted or glass bead blasted.
> Special dimensions upon request

* Take sealing materials and connecting elements into consideration



Flanges made of 1.4306 (304L), pipe component 1.4404 (316L)

Nominal width DN	a [mm]	Inside diameter dia.d [mm] (pipe dimension)	s [mm]	Article no.
16	38	16 (19x1.5)	1.5	7111F
40	63	38.4 (42.4x2)	2	7112F
63	105	66 (70x2)	2	7113F
100	135	100 (104x2)	2	7114F
160	167	150 (154x2)	2	7115F
200	187.5	200 (204x2)	2	7116F
250	229	250 (254x2)	2	7117F

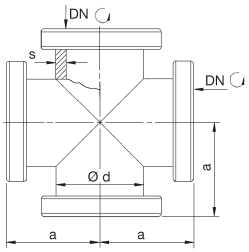
Flanges made of 1.4404 (316L), pipe component 1.4404 (316L)

Nominal width DN	a [mm]	Inside diameter dia.d [mm] (pipe dimension)	s [mm]	Article no.
16	38	16 (19x1.5)	1.5	7111F4
40	63	38.4 (42.4x2)	2	7112F4
63	105	66 (70x2)	2	7113F4
100	135	100 (104x2)	2	7114F4
160	167	150 (154x2)	2	7115F4
200	187.5	200 (204x2)	2	7116F4
250	229	250 (254x2)	2	7117F4

Component with flanges made of 316LNS upon request.

CF crosspiece, 2 flanges, rotatable

> Pressure range: 10^{-12} mbar to 1.0 bar
(with a leak rate under helium of $1x10^{-10}$mbarl/s)
> Temperature range: –196 °C to 300 °C 1.4306
> Temperature range: –196 °C to 350 °C 1.4404
> Bake-out capacity up component to 450 °C
> Surface NW16 to NW63 polished on outside and inside, NW100 to NW250 polished on inside, outside matted or glass bead blasted.
> Special dimensions upon request
* Take sealing materials and connecting elements into consideration



Flanges made of 1.4306 (304L), pipe component 1.4404 (316L)

Nominal width DN	a [mm]	Inside diameter dia.d [mm] (pipe dimension)	s [mm]	Article no. (F=flange, fixed) (R=flange, rotatable)
16	38	16 (19x1.5)	1.5	7111R
40	63	38.4 (42.4x2)	2	7112R
63	105	66 (70x2)	2	7113R
100	135	100 (104x2)	2	7114R
160	167	150 (154x2)	2	7115R
200	187.5	200 (204x2)	2	7116R
250	229	250 (254x2)	2	7117R

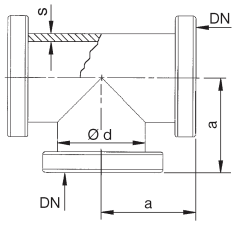
Flanges made of 1.4404 (316L), pipe component 1.4404 (316L)

Nominal width DN	a [mm]	Inside diameter dia.d [mm] (pipe dimension)	s [mm]	Article no. (F=flange, fixed) (R=flange, rotatable)
16	38	16 (19x1.5)	1.5	7111R4
40	63	38.4 (42.4x2)	2	7112R4
63	105	66 (70x2)	2	7113R4
100	135	100 (104x2)	2	7114R4
160	167	150 (154x2)	2	7115R4
200	187.5	200 (204x2)	2	7116R4
250	229	250 (254x2)	2	7117R4

Component with flanges made of 316LNS upon request.

CF-T piece flanges, fixed

> Pressure range: 10^{-12} mbar to 1.0 bar
(with a leak rate under helium of $1x10^{-10}$mbarl/s)
> Temperature range: –196 °C to 300 °C 1.4306
> Temperature range: –196 °C to 350 °C 1.4404
> Component bake-out capacity up to 450 °C
> Surface NW16 to NW63 polished on outside and inside, NW100 to NW250 polished on inside, outside matted or glass bead blasted.
> Special dimensions upon request
* Take sealing materials and connecting elements into consideration



Flanges made of 1.4306 (304L), pipe component 1.4404 (316L)

Nominal width DN	a [mm]	Inside diameter dia.d [mm] (pipe dimension)	s [mm]	Article no.
16	38	16 (19x1.5)	1.5	7121F
40	63	38.4 (42.4x2)	2	7122F
63	105	66 (70x2)	2	7123F
100	135	100 (104x2)	2	7124F
160	167	150 (154x2)	2	7125F
200	187.5	200 (204x2)	2	7126F
250	229	250 (254x2)	2	7127F

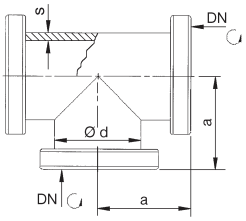
Flanges made of 1.4404 (316L), pipe component 1.4404 (316L)

Nominal width DN	a [mm]	Inside diameter dia.d [mm] (pipe dimension)	s [mm]	Article no.
16	38	16 (19x1.5)	1.5	7121F4
40	63	38.4 (42.4x2)	2	7122F4
63	105	66 (70x2)	2	7123F4
100	135	100 (104x2)	2	7124F4
160	167	150 (154x2)	2	7125F4
200	187.5	200 (204x2)	2	7126F4
250	229	250 (254x2)	2	7127F4

Component with flanges made of 316LNS upon request.

CF-T piece, 2 flanges, rotatable

> Pressure range: 10^{-12} mbar to 1.0 bar
(with a leak rate under helium of $1x10^{-10}$mbarl/s)
> Temperature range: –196 °C to 300 °C 1.4306
> Temperature range: –196 °C to 350 °C 1.4404
> Component bake-out capacity up to 450 °C
> Surface NW16 to NW63 polished on outside and inside, NW100 to NW250 polished on inside, outside matted or glass bead blasted.
> Special dimensions upon request
* Take sealing materials and connecting elements into consideration



Flanges made of 1.4306 (304L), pipe component 1.4404 (316L)

Nominal width DN	a [mm]	Inside diameter dia.d [mm] (pipe dimension)	s [mm]	Article no.
16	38	16 (19x1.5)	1.5	7121R
40	63	38.4 (42.4x2)	2	7122R
63	105	66 (70x2)	2	7123R
100	135	100 (104x2)	2	7124R
160	167	150 (154x2)	2	7125R
200	187.5	200 (204x2)	2	7126R
250	229	250 (254x2)	2	7127R

Flanges made of 1.4404 (316L), pipe component 1.4404 (316L)

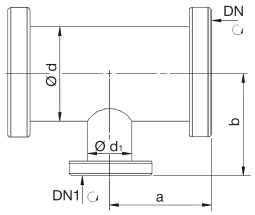
Nominal width DN	a [mm]	Inside diameter dia.d [mm] (pipe dimension)	s [mm]	Article no.
16	38	16 (19x1.5)	1.5	7121R4
40	63	38.4 (42.4x2)	2	7122R4
63	105	66 (70x2)	2	7123R4
100	135	100 (104x2)	2	7124R4
160	167	150 (154x2)	2	7125R4
200	187.5	200 (204x2)	2	7126R4
250	229	250 (254x2)	2	7127R4

Component with flanges made of 316LNS upon request.

CF reducer T piece, 2 flanges, rotatable

> Pressure range: 10^{-12} mbar to 1.0 bar
(with a leak rate under helium of $1x10^{-10}$mbarl/s)
> Temperature range: –196 °C to 300 °C 1.4306
> Temperature range: –196 °C to 350 °C 1.4404
> Component bake-out capacity up to 450 °C
> Surface NW16 to NW63 polished on outside and inside, NW100 to NW250 polished on inside, outside matted or glass bead blasted.
> Special dimensions upon request

* Take sealing materials and connecting elements into consideration



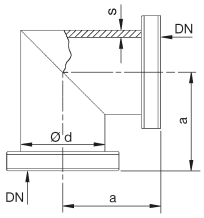
Flanges made of 1.4306 (304L), pipe component 1.4571 (316Ti) or 1.4404 (316L)

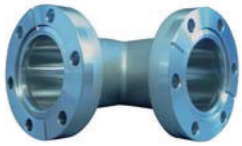
DN	a [mm]	b [mm]	Inside diameter dia.d [mm] (pipe dimension)	Inside diameter dia.d1 [mm] (pipe dimension)	Article no.
40/16	63	60	38.4 (42.4x2)	16 (19x1.5)	7152R
63/40	105	75	66 (70x2)	38.4 (42.4x2)	7153R
100/63	135	95	100 (104x2)	66 (70x2)	7154R
160/63	167	120	150 (154x2)	66 (70x2)	7155R
160/100	167	120	150 (154x2)	100 (104x2)	7156R

Component with flanges made of 316LNS upon request.

CF angles, flanges, fixed

> Pressure range: 10^{-12} mbar to 1.0 bar
(with a leak rate under helium of $1x10^{-10}$mbarl/s)
> Temperature range: –196 °C to 300 °C 1.4306
> Temperature range: –196 °C to 350 °C 1.4404
> Component bake-out capacity up to 450 °C
> Surface NW16 to NW63 polished on outside and inside, NW100 to NW250 polished on inside, outside matted or glass bead blasted.
> Special dimensions upon request
* Take sealing materials and connecting elements into consideration





Flanges made of 1.4306 (304L), pipe component 1.4404 (316L)

Nominal width DN	a [mm]	Inside diameter dia.d [mm] (pipe dimension)	s [mm]	Article no.
16	38	16 (19x1.5)	1.5	7131F
40	63	38.4 (42.4x2)	2	7132F
63	105	66 (70x2)	2	7133F
100	135	100 (104x2)	2	7134F
160	167	150 (154x2)	2	7135F
200	187.5	200 (204x2)	2	7136F
250	229	250 (254x2)	2	7137F

Flanges made of 1.4404 (316L), pipe component 1.4404 (316L)

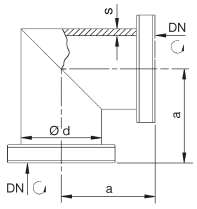
Nominal width DN	a [mm]	Inside diameter dia.d [mm] (pipe dimension)	s [mm]	Article no.
16	38	16 (19x1.5)	1.5	7131F4
40	63	38.4 (42.4x2)	2	7132F4
63	105	66 (70x2)	2	7133F4
100	135	100 (104x2)	2	7134F4
160	167	150 (154x2)	2	7135F4
200	187.5	200 (204x2)	2	7136F4
250	229	250 (254x2)	2	7137F4

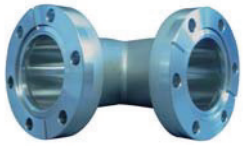
Component with flanges made of 316LNS upon request.

CF angles, 2 flanges, rotatable

> Pressure range: 10^{-12} mbar to 1.0 bar
(with a leak rate under helium of $1x10^{-10}$mbarl/s)
> Temperature range: –196 °C to 300 °C 1.4306
> Temperature range: –196 °C to 350 °C 1.4404
> Component bake-out capacity up to 450 °C
> Surface NW16 to NW63 polished on outside and inside, NW100 to NW250 polished on inside, outside matted or glass bead blasted.
> Special dimensions upon request

* Take sealing materials and connecting elements into consideration





Flanges made of 1.4306 (304L), pipe component 1.4404 (316L)

Nominal width DN	a [mm]	Inside diameter dia.d [mm] (pipe dimension)	s [mm]	Article no.
16	38	16 (19x1.5)	1.5	7131R
40	63	38.4 (42.4x2)	2	7132R
63	105	66 (70x2)	2	7133R
100	135	100 (104x2)	2	7134R
160	167	150 (154x2)	2	7135R
200	187.5	200 (204x2)	2	7136R
250	229	250 (254x2)	2	7137R

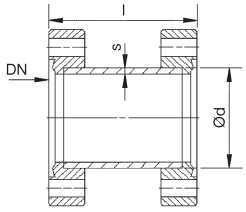
Flanges made of 1.4404 (316L), pipe component 1.4404 (316L)

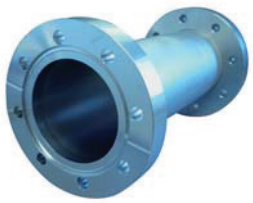
Nominal width DN	a [mm]	Inside diameter dia.d [mm] (pipe dimension)	s [mm]	Article no.
16	38	16 (19x1.5)	1.5	7131R4
40	63	38.4 (42.4x2)	2	7132R4
63	105	66 (70x2)	2	7133R4
100	135	100 (104x2)	2	7134R4
160	167	150 (154x2)	2	7135R4
200	187.5	200 (204x2)	2	7136R4
250	229	250 (254x2)	2	7137R4

Component with flanges made of 316LNS upon request.

CF connecting piece, flanges, fixed

> Pressure range: 10^{-12} mbar to 1.0 bar
(with a leak rate under helium of $1x10^{-10}$mbarl/s)
> Temperature range: –196 °C to 300 °C 1.4306
> Temperature range: –196 °C to 350 °C 1.4404
> Component bake-out capacity up to 450 °C
> Surface NW16 to NW63 polished on outside and inside, NW100 to NW250 polished on inside, outside matted or glass bead blasted.
> Special dimensions upon request
* Take sealing materials and connecting elements into consideration





Flanges made of 1.4306 (304L), pipe component 1.4404 (316L)

Nominal width DN	l [mm]	Outside diameter dia.d [mm] (pipe dimension)	s [mm]	Article no.
16	According to customer request (standard 76 mm)	19 (19x1.5)	1.5	7171F
40	According to customer request (standard 126 mm)	42.4 (42.4x2)	2	7172F
63	According to customer request (standard 210 mm)	70 (70x2)	2	7173F
100	According to customer request (standard 270 mm)	104 (104x2)	2	7174F
160	According to customer request (standard 334 mm)	154 (154x2)	2	7175F
200	According to customer request (standard 375 mm)	204 (204x2)	2	7176F
250	According to customer request (standard 458 mm)	254 (254x2)	2	7177F

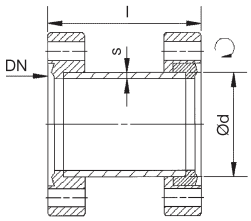
Flanges made of 1.4404 (316L), pipe component 1.4404 (316L)

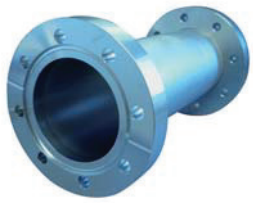
Nominal width DN	l [mm]	Outside diameter dia.d [mm] (pipe dimension)	s [mm]	Article no.
16	According to customer request (standard 76 mm)	19 (19x1.5)	1.5	7171F4
40	According to customer request (standard 126 mm)	42.4 (42.4x2)	2	7172F4
63	According to customer request (standard 210 mm)	70 (70x2)	2	7173F4
100	According to customer request (standard 270 mm)	104 (104x2)	2	7174F4
160	According to customer request (standard 334 mm)	154 (154x2)	2	7175F4
200	According to customer request (standard 375 mm)	204 (204x2)	2	7176F4
250	According to customer request (standard 458 mm)	254 (254x2)	2	7177F4

Component with flanges made of 316LNS upon request.

CF connecting piece, 1 flange, rotatable

> Pressure range: 10^{-12} mbar to 1.0 bar
(with a leak rate under helium of $1x10^{-10}$mbarl/s)
> Temperature range: –196 °C to 300 °C 1.4306
> Temperature range: –196 °C to 350 °C 1.4404
> Component bake-out capacity up to 450 °C
> Surface NW16 to NW63 polished on outside and inside, NW100 to NW250 polished on inside, outside matted or glass bead blasted.
> Special dimensions upon request
* Take sealing materials and connecting elements into consideration





Flanges made of 1.4306 (304L), pipe component 1.4404 (316L)

Nominal width DN	l [mm]	Outside diameter dia.d [mm] (pipe dimension)	s [mm]	Article no.
16	According to customer request (standard 76 mm)	19 (19x1.5)	1.5	7171R
40	According to customer request (standard 126 mm)	42.4 (42.4x2)	2	7172R
63	According to customer request (standard 210 mm)	70 (70x2)	2	7173R
100	According to customer request (standard 270 mm)	104 (104x2)	2	7174R
160	According to customer request (standard 334 mm)	154 (154x2)	2	7175R
200	According to customer request (standard 375 mm)	204 (204x2)	2	7176R
250	According to customer request (standard 458 mm)	254 (254x2)	2	7177R

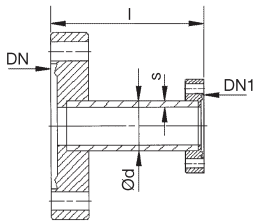
Flanges made of 1.4404 (316L), pipe component 1.4404 (316L)

Nominal width DN	l [mm]	Outside diameter dia.d [mm] (pipe dimension)	s [mm]	Article no.
16	According to customer request (standard 76 mm)	19 (19x1.5)	1.5	7171R4
40	According to customer request (standard 126 mm)	42.4 (42.4x2)	2	7172R4
63	According to customer request (standard 210 mm)	70 (70x2)	2	7173R4
100	According to customer request (standard 270 mm)	104 (104x2)	2	7174R4
160	According to customer request (standard 334 mm)	154 (154x2)	2	7175R4
200	According to customer request (standard 375 mm)	204 (204x2)	2	7176R4
250	According to customer request (standard 458 mm)	254 (254x2)	2	7177R4

Component with flanges made of 316LNS upon request.

CF reducing fitting, flanges, fixed

> Pressure range: 10^{-12} mbar to 1.0 bar
(with a leak rate under helium of $1x10^{-10}$mbarl/s)
> Temperature range: –196 °C to 300 °C 1.4306
> Temperature range: –196 °C to 350 °C 1.4404
> Component bake-out capacity up to 450 °C
> Surface NW16 to NW63 polished on outside and inside, NW100 to NW250 polished on inside, outside matted or glass bead blasted.
> Special dimensions upon request
* Take sealing materials and connecting elements into consideration



Flanges made of 1.4306 (304L), pipe component 1.4404 (316L)

DN / DN1	l [mm]	Outside diameter dia.d [mm] (pipe dimension)	s [mm]	Article no.
40 / 16	45	19 (19x1.5)	1.5	7161F
63 / 16	75	19 (19x1.5)	1.5	7162F
63 / 40	75	42.4 (42.4x2)	2	7163F
100 / 40	95	42.4 (42.4x2)	2	7164F
100 / 63	95	70 (70x2)	2	7165F
160 / 40	105	42.4 (42.4x2)	2	7166F
160 / 63	105	70 (70x2)	2	7167F
160 / 100	105	104 (104x2)	2	7168F

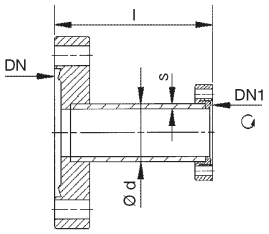
Flanges made of 1.4404 (316L), pipe component 1.4404 (316L)

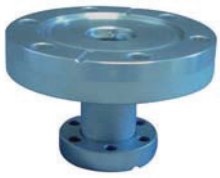
DN / DN1	l [mm]	Outside diameter dia.d [mm] (pipe dimension)	s [mm]	Article no.
40 / 16	45	19 (19x1.5)	1.5	7161F4
63 / 16	75	19 (19x1.5)	1.5	7162F4
63 / 40	75	42.4 (42.4x2)	2	7163F4
100 / 40	95	42.4 (42.4x2)	2	7164F4
100 / 63	95	70 (70x2)	2	7165F4
160 / 40	105	42.4 (42.4x2)	2	7166F4
160 / 63	105	70 (70x2)	2	7167F4
160 / 100	105	104 (104x2)	2	7168F4

Component with flanges made of 316LNS upon request.

CF reducing fitting, 1 flange, rotatable

> Pressure range: 10^{-12} mbar to 1.0 bar
(with a leak rate under helium of $1x10^{-10}$mbarl/s)
> Temperature range: –196 °C to 300 °C 1.4306
> Temperature range: –196 °C to 350 °C 1.4404
> Component bake-out capacity up to 450 °C
> Surface NW16 to NW63 polished on outside and inside, NW100 to NW250 polished on inside, outside matted or glass bead blasted.
> Special dimensions upon request
* Take sealing materials and connecting elements into consideration





Flanges made of 1.4306 (304L), pipe component 1.4404 (316L)

Nominal width DN	l [mm]	Outside diameter dia.d [mm] (pipe dimension)	s [mm]	Article no.
40 / 16	45	19 (19x1.5)	1.5	7161R
63 / 16	75	19 (19x1.5)	1.5	7162R
63 / 40	75	42.4 (42.4x2)	2	7163R
100 / 40	95	42.4 (42.4x2)	2	7164R
100 / 63	95	70 (70x2)	2	7165R
160 / 40	105	42.4 (42.4x2)	2	7166R
160 / 63	105	70 (70x2)	2	7167R
160 / 100	105	104 (104x2)	2	7168R

Flanges made of 1.4404 (316L), pipe component 1.4404 (316L)

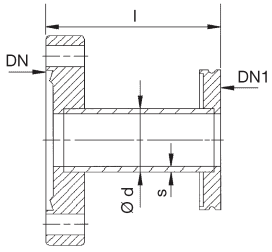
Nominal width DN	l [mm]	Outside diameter dia.d [mm] (pipe dimension)	s [mm]	Article no.
40 / 16	45	19 (19x1.5)	1.5	7161R4
63 / 16	75	19 (19x1.5)	1.5	7162R4
63 / 40	75	42.4 (42.4x2)	2	7163R4
100 / 40	95	42.4 (42.4x2)	2	7164R4
100 / 63	95	70 (70x2)	2	7165R4
160 / 40	105	42.4 (42.4x2)	2	7166R4
160 / 63	105	70 (70x2)	2	7167R4
160 / 100	105	104 (104x2)	2	7168R4

Component with flanges made of 316LNS upon request.

CF-ISO-K adapter piece, flange fixed

> Pressure range: 10^{-7}mbar to 2.5 bar with elastomer seals
> Pressure range: 10^{-9}mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C 1.4306
> Temperature range: –196 °C to 350 °C 1.4404
> Surface NW16 to NW63 polished on outside and inside, NW100 to NW250 polished on inside, outside matted or glass bead blasted.
> Special dimensions upon request

* Take sealing materials and connecting elements into consideration



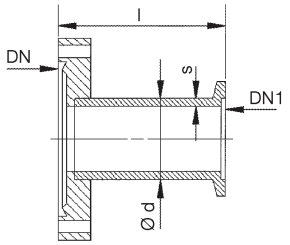
CF flange 1.4306 (304L), IOS-K flange made of 1.4301 (304), pipe component 1.4404

DN / DN1	l [mm]	Outside diameter dia.d [mm] (pipe dimension)	s [mm]	Article no.
CF63 / ISO-K 63	90	70 (70x2)	2	7191
CF100 / ISO-K 63	90	70 (70x2)	2	7192
CF100 / ISO-K 100	90	104 (104x2)	2	7193
CF100 / ISO-K 160	90	104 (104x2)	2	7194
CF160 / ISO-K 63	90	70 (70x2)	2	7195
CF160 / ISO-K 100	90	104 (104x2)	2	7196
CF160 / ISO-K 160	90	154 (154x2)	2	7197

CF-KF adapter piece, flange fixed

> Pressure range: 10^{-7}mbar to 2.5 bar with elastomer seals
> Pressure range: 10^{-9}mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C 1.4306
> Temperature range: –196 °C to 350 °C 1.4404
> Surface NW16 to NW63 polished on outside and inside, NW100 to NW250 polished on inside, outside matted or glass bead blasted.
> Special dimensions upon request

* Take sealing materials and connecting elements into consideration

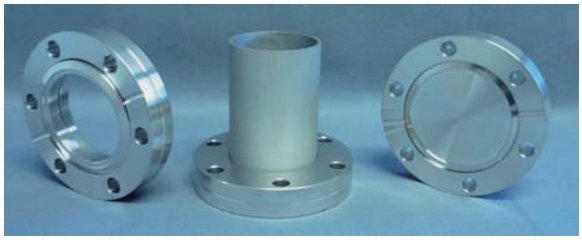


CF flange 1.4306 (304L), KF flange made of 1.4301 (304)

DN / DN1	l [mm]	Outside diameter dia.d [mm] (pipe dimension)	s [mm]	Article no.
CF16 / KF16	36	20 (20x2)	2.0	7181
CF16 / KF25	36	18 (18x1.5)	1.5	7182
CF40 / KF16	36	20 (20x2)	2.0	7183
CF40 / KF25	36	29 (29x2)	2.0	7184
CF40 / KF40	50	45 (45x2.5)	2.5	7185
CF63 / KF25	50	29 (29x2)	2.0	7186
CF63 / KF40	50	45 (45x2.5)	2.5	7187
CF100 / KF25	50	29 (29x2)	2.0	7188
CF100 / KF40	50	45 (45x2.5)	2.5	7189

Component with flanges made of 316L or 316LNS upon request.

CF components



Properties of high-grade steel 1.4306/1.4404:

- high leak rate (<10^{-10} mbarl/s)
- high conductance
- gap-free welded
- bake-out capacity up to 450 °C
- cleaned in UHV-compatible manner
- special dimensions upon request

Description:

The novotek CF components are turned from high-grade steel. Particular emphasis is placed on exact profile production during this process. The cutting edge, the decisive element of the CF components, is protected by a flange cap. Any damage to the cutting edge renders the component unusable. On the cutting edge side, the flanges have a radial leak detection groove so that, during the leak test, a check directly at the seal is possible.

Area of application:

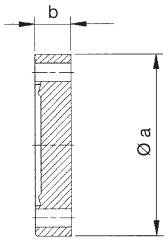
The novotek CF junctions can be used in systems with pre-, high- and UHV-vacuum.

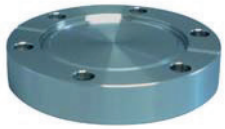
Materials:

CF welding flanges made of 1.4306 (304L), 1.4404(316L) and pipe components made of 1.4404 (316L) / 1.4571 (316Ti) Special material such as 1.4429 ESR is available upon request.

CF blind flange, fixed

> Pressure range: 10^{-12} mbar to 1.0 bar
> Temperature range 1.4301: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
> Flanges made of 1.4306 (304L), 1.4404 (316L)
> Bake-out capacity up to 450 °C
> Other materials and sizes upon request
* Take sealing materials and connecting elements into consideration





High-grade steel 1.4306 (304L)

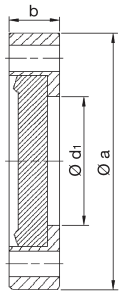
Nominal width DN	dia.a [mm]	b [mm]	Article no.
16	34	7.6	7421F
40	70	12.7	7422F
63	113.5	17.5	7423F
100	152	19.9	7424F
160	203	22.3	7425F
200	254	24.6	7426F
250	305	25	7427F

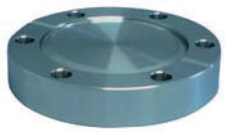
High-grade steel 1.4404 (316L)

Nominal width DN	dia.a [mm]	b [mm]	Article no.
16	34	7.6	7421F4
40	70	12.7	7422F4
63	113.5	17.5	7423F4
100	152	19.9	7424F4
160	203	22.3	7425F4
200	254	24.6	7426F4
250	305	25	7427F4

CF blind flange, rotatable 1.4306 (304L)

> Pressure range: 10^{-12} mbar to 1.0 bar
> Temperature range: –196 °C to 300 °C
> Bake-out capacity up to 450 °C
> Other materials and sizes upon request
* Take sealing materials and connecting elements into consideration

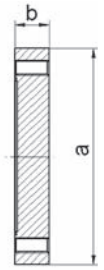




Nominal width DN	dia.a [mm]	b [mm]	dia.d1 [mm]	Article no.
16	34	7.6	19	7421R
40	70	12.7	42.5	7422R
63	113.5	17.5	72	7423R
100	152	19.9	109	7424R
160	203	22.3	161	7425R
200	254	24.6	207	7426R
250	305	25	260	7427R

CF blind flange, fixed, with thread

> Pressure range: 10^{-12} mbar to 1.0 bar
> Temperature range 1.4301: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
> Flanges made of 1.4306 (304L), 1.4404 (316L)
> Bake-out capacity up to 450 °C
> Other materials and sizes upon request
* Take sealing materials and connecting elements into consideration



High-grade steel 1.4306 (304L)

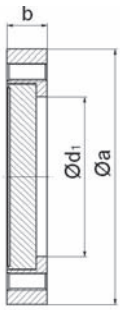
Nominal width DN	dia.a [mm]	b [mm]	Article no.
16	34	7.6	7421FG
40	70	12.7	7422FG
63	113.5	17.5	7423FG
100	152	19.9	7424FG
160	203	22.3	7425FG
200	254	24.6	7426FG
250	305	25	7427FG

High-grade steel 1.4404 (316L)

Nominal width DN	dia.a [mm]	b [mm]	Article no.
16	34	7.6	7421FG4
40	70	12.7	7422FG4
63	113.5	17.5	7423FG4
100	152	19.9	7424FG4
160	203	22.3	7425FG4
200	254	24.6	7426FG4
250	305	25	7427FG4

CF blind flange, rotatable with thread 1.4306 (304L)

> Pressure range: 10^{-12} mbar to 1.0 bar
> Temperature range: –196 °C to 300 °C
> Flanges made of 1.4306 (304L)
> Bake-out capacity up to 450 °C
> Other materials and sizes upon request
* Take sealing materials and connecting elements into consideration

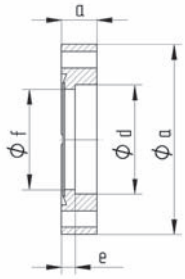


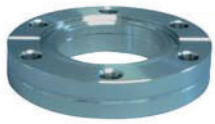
Nominal width DN	dia.a [mm]	b [mm]	dia.d1 [mm]	Article no.
16	34	7.6	19	7421RG
40	70	12.7	42.5	7422RG
63	113.5	17.5	72	7423RG
100	152	19.9	109	7424RG
160	203	22.3	161	7425RG
200	254	24.6	207	7426RG
250	305	25	260	7427RG

CF welding flange, fixed

> Pressure range: 10^{-12} mbar to 1.0 bar
> Temperature range 1.4306: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
> Bake-out capacity up to 450 °C
> Other materials and sizes upon request

* Take sealing materials and connecting elements into consideration





High-grade steel 1.4306 (304L)

Nominal width DN	dia.a [mm]	b [mm]	dia.d [mm]	e [mm]	dia.f [mm]	Article no.
16	34	7.6	18	4.8	16.5	7511F
38	70	12.7	38.2	4.8	35	7512F3
40	70	12.7	40.2	4.8	37	7512F4
63	113.5	17.5	70.3	7.9	66	7513F
100	152	19.9	104.3	9.5	100.5	7514F
160	203	22.3	154.3	9.5	150.5	7515F
200	254	24.6	204.5	9.5	200.5	7516F
250	305	25	254.7	12.7	250	7517F

High-grade steel 1.4404 (316L)

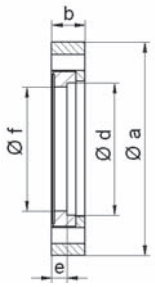
Nominal width DN	dia.a [mm]	b [mm]	dia.d [mm]	e [mm]	dia.f [mm]	Article no.
16	34	7.6	18	4.8	16.5	7511F4
38	70	12.7	38.2	4.8	35	7512F34
40	70	12.7	40.2	4.8	37	7512F44
63	113.5	17.5	70.3	7.9	66	7513F4
100	152	19.9	104.3	9.5	100.5	7514F4
160	203	22.3	154.3	9.5	150.5	7515F4
200	254	24.6	204.5	9.5	200.5	7516F4
250	305	25	254.7	12.7	250	7517F4

Flange made of 316LNS upon request!

CF welding flange, rotatable

> Pressure range: 10^{-12} mbar to 1.0 bar
> Temperature range 1.4306: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
> Bake-out capacity up to 450 °C
> Other materials and sizes upon request

* Take sealing materials and connecting elements into consideration



High-grade steel 1.4306 (304L)

Nominal width DN	dia.a [mm]	b [mm]	dia.d [mm]	e [mm]	dia.f [mm]	Article no.
16	34	7.6	18	4.8	16.5	7511R
38	70	12.7	38.2	4.8	35	7512R3
40	70	12.7	40.2	4.8	37	7512R4
63	113.5	17.5	70.3	7.9	66	7513R
100	152	19.9	104.3	9.5	100.5	7514R
160	203	22.3	154.3	9.5	150.5	7515R
200	254	24.6	204.5	9.5	200.5	7516R
250	305	25	254.7	12.7	250	7517R

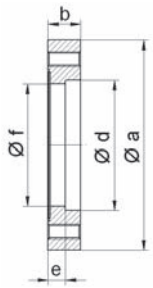
High-grade steel 1.4404 (316L)

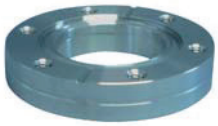
Nominal width DN	dia.a [mm]	b [mm]	dia.d [mm]	e [mm]	dia.f [mm]	Article no.
16	34	7.6	18	4.8	16.5	7511R4
38	70	12.7	38.2	4.8	35	7512R34
40	70	12.7	40.2	4.8	37	7512R44
63	113.5	17.5	70.3	7.9	66	7513R4
100	152	19.9	104.3	9.5	100.5	7514R4
160	203	22.3	154.3	9.5	150.5	7515R4
200	254	24.6	204.5	9.5	200.5	7516R4
250	305	25	254.7	12.7	250	7517R4

Flange made of 316LNS upon request!

CF welding flange, fixed, with thread

> Pressure range: 10^{-12} mbar to 1.0 bar
> Temperature range 1.4306: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
> Bake-out capacity up to 450 °C
> Other materials and sizes upon request
* Take sealing materials and connecting elements into consideration





High-grade steel 1.4306 (304L)

Nominal width DN	dia.a [mm]	b [mm]	dia.d [mm]	e [mm]	dia.f [mm]	Article no.
16	34	7.6	18	4.8	16.5	7511FG
38	70	12.7	38.2	4.8	35	7512FG3
40	70	12.7	40.2	4.8	37	7512FG4
63	113.5	17.5	70.3	7.9	66	7513FG
100	152	19.9	104.3	9.5	100.5	7514FG
160	203	22.3	154.3	9.5	150.5	7515FG
200	254	24.6	204.5	9.5	200.5	7516FG
250	305	25	254.7	12.7	250	7517FG

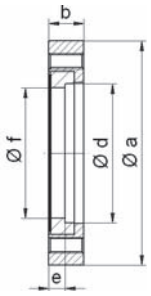
High-grade steel 1.4404 (316L)

Nominal width DN	dia.a [mm]	b [mm]	dia.d [mm]	e [mm]	dia.f [mm]	Article no.
16	34	7.6	18	4.8	16.5	7511FG4
25	54	12	28.2	7.2	25	75115FG4
38	70	12.7	38.2	4.8	35	7512FG34
40	70	12.7	40.2	4.8	37	7512FG44
63	113.5	17.5	70.3	7.9	66	7513FG4
100	152	19.9	104.3	9.5	100.5	7514FG4
160	203	22.3	154.3	9.5	150.5	7515FG4
200	254	24.6	204.5	9.5	200.5	7516FG4
250	305	25	254.7	12.7	250	7517FG4

Flange made of 316LNS upon request!

CF welding flange, rotatable, with thread

> Pressure range: 10^{-12} mbar to 1.0 bar
> Temperature range 1.4306: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
> Bake-out capacity up to 450 °C
> Other materials and sizes upon request
* Take sealing materials and connecting elements into consideration



High-grade steel 1.4306 (304L)

Nominal width DN	dia.a [mm]	b [mm]	dia.d [mm]	e [mm]	dia.f [mm]	Article no.
16	34	7.6	18	4.8	16.5	7511RG
38	70	12.7	38.2	4.8	35	7512R3G
40	70	12.7	40.2	4.8	37	7512R4G
63	113.5	17.5	70.3	7.9	66	7513RG
100	152	19.9	104.3	9.5	100.5	7514RG
160	203	22.3	154.3	9.5	150.5	7515RG
200	254	24.6	204.5	9.5	200.5	7516RG
250	305	25	254.7	12.7	250	7517RG

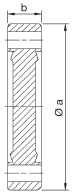
High-grade steel 1.4404 (316L)

Nominal width DN	dia.a [mm]	b [mm]	dia.d [mm]	e [mm]	dia.f [mm]	Article no.
16	34	7.6	18	4.8	16.5	7511RG4
38	70	12.7	38.2	4.8	35	7512R3G4
40	70	12.7	40.2	4.8	37	7512R4G4
63	113.5	17.5	70.3	7.9	66	7513RG4
100	152	19.9	104.3	9.5	100.5	7514RG4
160	203	22.3	154.3	9.5	150.5	7515RG4
200	254	24.6	204.5	9.5	200.5	7516RG4
250	305	25	254.7	12.7	250	7517RG4

Flange made of 316LNS upon request!

CF double-sided blind flange 1.4306 (304L)

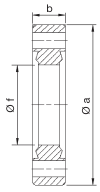
> Pressure range: 10^{-12} mbar to 1.0 bar
> Temperature range: –196 °C to 300 °C
> Flanges made of 1.4306 (304L)
> Bake-out capacity up to 450 °C
> Other materials and sizes upon request
* Take sealing materials and connecting elements into consideration

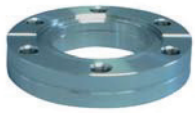


Nominal width DN	dia.a [mm]	b [mm]	Article no.
16	34	7.6	7431F
40	70	12.7	7432F
63	113.5	17.5	7433F
100	152	19.9	7434F
160	203	22.3	7435F

CF double-sided feedthrough flange 1.4306 (304L)

> Pressure range: 10^{-12} mbar to 1.0 bar
> Temperature range: –196 °C to 300 °C
> Flanges made of 1.4306 (304L)
> Bake-out capacity up to 450 °C
> Other materials and sizes upon request
* Take sealing materials and connecting elements into consideration

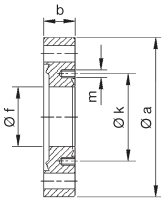


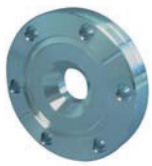


Nominal width DN	dia.a [mm]	b [mm]	dia.f [mm]	Article no.
16	34	7.6	16.5	7531
40	70	12.7	38.5	7532
63	113.5	17.5	66	7533
100	152	19.9	100.5	7534
160	203	22.3	150.5	7535

CF reducing flange 1.4306 (304L)

> Pressure range: 10^{-12} mbar to 1.0 bar
> Temperature range: –196 °C to 300 °C
> Flanges made of 1.4306 (304L)
> Bake-out capacity up to 450 °C
> Other materials and sizes upon request
* Take sealing materials and connecting elements into consideration



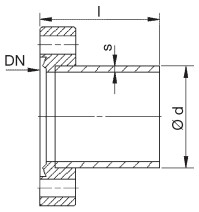


Nominal width DN / DN1	dia.a [mm]	b [mm]	dia.f [mm]	dia.k [mm]	m [thread]	Article no.
40 / 16	70	12.7	16	27	M4	7541
63 / 16	113.5	17.5	16	27	M4	7542
63 / 40	113.5	17.5	37	58.7	M6	7543
100 / 40	152	19.9	37	58.7	M6	7544
100 / 63	152	19.9	66	92.1	M8	7545
160 / 40	203	22.3	37	58.7	M6	7546
160 / 63	203	22.3	66	92.1	M8	7547
160 / 100	203	22.3	100.5	130.3	M8	7548

CF flange with flanged socket, fixed

> Pressure range: 10^{-12} mbar to 1.0 bar
(with a leak rate under helium of $1x10^{-10}$mbarl/s)
> Temperature range 1.4306: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
> Flanges made of 1.4306 (304L), 1.4404 (316L) and pipes made of 1.4404 (316L)
> Component bake-out capacity up to 450 °C
> Surface NW16 to NW63 polished on outside and inside, NW100 to NW250 polished on inside, outside matted or glass bead blasted.
> Special dimensions upon request

* Take sealing materials and connecting elements into consideration



High-grade steel 1.4306 (304L)

Nominal width DN	l [mm]	dia.d [mm] (pipe dimension)	s [mm]	Article no.
16	38	18 (18x1)	1.0	7571F
38	63	38 (38x1.5)	1.5	7572F3
40	63	40 (40x1.5)	2.0	7572F4
63	105	70 (70x2)	2.0	7573F
100	135	104 (104x2)	2.0	7574F
160	167	154 (154x2)	2.0	7575F
200	167	204 (204x2)	2.0	7576F
250	167	254 (254x2)	2.0	7577F

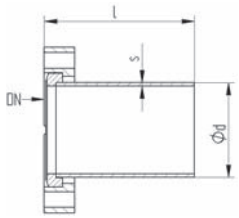
High-grade steel 1.4404 (316L)

Nominal width DN	l [mm]	dia.d [mm] (pipe dimension)	s [mm]	Article no.
16	38	18 (18x1)	1.0	7571F4
38	63	38 (38x1.5)	1.5	7572F34
40	63	40 (40x1.5)	2.0	7572F44
63	105	70 (70x2)	2.0	7573F4
100	135	104 (104x2)	2.0	7574F4
160	167	154 (154x2)	2.0	7575F4
200	167	204 (204x2)	2.0	7576F4
250	167	254 (254x2)	2.0	7577F4

Flange made of 316LNS upon request!

CF flange with flanged socket, rotatable

> Pressure range: 10^{-12} mbar to 1.0 bar
(with a leak rate under helium of $1x10^{-10}$mbarl/s)
> Temperature range 1.4306: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
> Flanges made of 1.4306 (304L), 1.4404 (316L) and pipes made of 1.4404 (316L)
> Component bake-out capacity up to 450 °C
> Surface NW16 to NW63 polished on outside and inside, NW100 to NW250 polished on inside, outside matted or glass bead blasted.
> Special dimensions upon request
* Take sealing materials and connecting elements into consideration



High-grade steel 1.4306 (304L)

Nominal width DN	l [mm]	dia.d [mm] (pipe dimension)	s [mm]	Article no.
16	38	18 (18x1)	1.0	7571R
38	63	38 (38x1.5)	1.5	7572R3
40	63	40 (40x1.5)	2.0	7572R4
63	105	70 (70x2)	2.0	7573R
100	135	104 (104x2)	2.0	7574R
160	167	154 (154x2)	2.0	7575R
200	167	204 (204x2)	2.0	7576R
250	167	254 (254x2)	2.0	7577R

High-grade steel 1.4404 (316L)

Nominal width DN	l [mm]	dia.d [mm] (pipe dimension)	s [mm]	Article no.
16	38	18 (18x1)	1.0	7571R4
38	63	38 (38x1.5)	1.5	7572R34
40	63	40 (40x1.5)	2.0	7572R44
63	105	70 (70x2)	2.0	7573R4
100	135	104 (104x2)	2.0	7574R4
160	167	154 (154x2)	2.0	7575R4
200	167	204 (204x2)	2.0	7576R4
250	167	254 (254x2)	2.0	7577R4

Flange made of 316LNS upon request!

CF adapter

Properties of high-grade steel 1.4306/1.4404:

- high leak rate (<10^{-9}mbarl/s)
- high conductance
- gap-free welded
- cleaned in UHV-compatible manner
- special dimensions upon request

Description:

The novotek CF adapters serve as transitions from the CF flange to a very wide variety of vacuum-compatible systems.

Area of application:

The novotek CF adapters allow the installation of vacuum attachments for the pressure range of 1000 mbar up to 10^{-9} mbar.

CF adapter for double compression fitting, metric

> Pressure range: 10^{-9}mbar to 1.0 bar
> Temperature range 1.4306: –196 °C to 300 °C
> Flanges made of 1.4306 (304L), adapter 1.4404 (316L)
> Other materials and sizes upon request

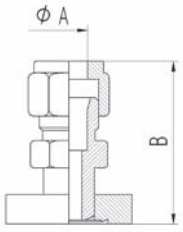
* Take sealing materials and connecting elements into consideration

1.4306 (304L) Swagelok®-compatible

Nominal width DN	dia.A [mm]	B [mm]	Article no.
16	6	39	7551-6
16	8	40	7551-8
16	10	42	7551-10
16	12	45	7551-12
40	6	39	7552-6
40	8	40	7552-8
40	10	42	7552-10
40	12	45	7552-12

CF adapter for double compression fitting, metric

> Pressure range: 10^{-9}mbar to 1.0 bar
> Temperature range 1.4404: –196 °C to 350 °C
> Flanges made of 1.4404 (316L), adapter 1.4404 (316L)
> Other materials and sizes upon request
* Take sealing materials and connecting elements into consideration

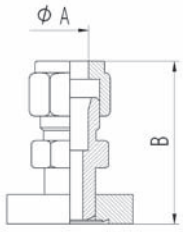


1.4404 (316L) Swagelok®-compatible

Nominal width DN	dia.A [mm]	B [mm]	Article no.
16	6	39	7551-6-4
16	8	40	7551-8-4
16	10	42	7551-10-4
16	12	45	7551-12-4
40	6	39	7552-6-4
40	8	40	7552-8-4
40	10	42	7552-10-4
40	12	45	7552-12-4

CF adapter for double compression fitting, imperial

> Pressure range: 10^{-9}mbar to 1.0 bar
> Temperature range 1.4306: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
> Flanges made of 1.4306 (304L) 1.4404 (316L), adapter 1.4404 (316L)
> Other materials and sizes upon request
* Take sealing materials and connecting elements into consideration



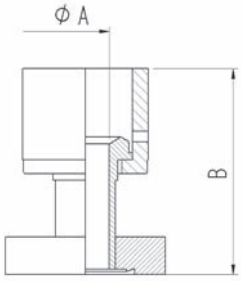
1.4306 (304L) Swagelok®-compatible

Nominal width DN	dia.A [mm]	B [mm]	Article no.
16	¼“	39	7556-14
16	3/8“	41	7556-38
16	½“	45	7556-12
40	¼“	39	7557-14
40	3/8“	41	7557-38
40	½“	45	7557-12

1.4404 (316L) Swagelok®-compatible

Nominal width DN	dia.A [mm]	B [mm]	Article no.
16	¼“	39	7556-14-4
16	3/8“	41	7556-38-4
16	½“	45	7556-12-4
40	¼“	39	7557-14-4
40	3/8“	41	7557-38-4
40	½“	45	7557-12-4

CF-HTC adapter, female



> Pressure range: 10^{-9}mbar to 1.0 bar
> Temperature range 1.4306: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
> Flanges made of 1.4306 (304L) 1.4404 (316L), adapter 1.4404 (316L)
> Other materials and sizes upon request
* Take sealing materials and connecting elements into consideration

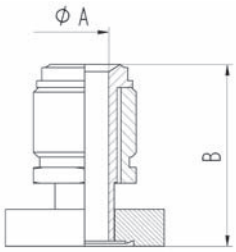
1.4306 (304L) VCR®-compatible

Nominal width DN	dia.A [mm]	B [mm]	Article no.
16	¼“	42	7561-14
16	½“	44	7561-12
40	¼“	42	7562-14
40	½“	44	7562-12

1.4404 (316L) VCR®-compatible

Nominal width DN	dia.A [mm]	B [mm]	Article no.
16	¼“	42	7561-14-4
16	½“	44	7561-12-4
40	¼“	42	7562-14-4
40	½“	44	7562-12-4

CF-HTC adapter, male



> Pressure range: 10^{-9}mbar to 1.0 bar
> Temperature range 1.4306: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
> Flanges made of 1.4306 (304L) 1.4404 (316L), adapter 1.4404 (316L)
> Other materials and sizes upon request
* Take sealing materials and connecting elements into consideration

1.4306 (304L) VCR®-compatible

Nominal width DN	dia.A [mm]	B [mm]	Article no.
16	¼“	34	7566-14
16	½“	39	7566-12
40	¼“	37	7567-14
40	½“	39	7567-12

1.4404 (316L) VCR®-compatible

Nominal width DN	dia.A [mm]	B [mm]	Article no.
16	¼“	34	7566-14-4
16	½“	39	7566-12-4
40	¼“	37	7567-14-4
40	½“	39	7567-12-4

CF hoses and metal spring bellows

Properties of high-grade steel 1.4306/1.4404:

- temperature range –196 °C to +350 °C
- suitable for high vacuum up to $1x10^{-9}$mbar
- metal hose lengths of 5 m and longer are possible

Description:
The novotek metal hoses are circular corrugated all-metal hoses. The profiling on the corrugation determines the elastic pliability and compressive resistance. The typical CF flanges are welded onto the metal hoses. To eliminate temper colours and clean the weld seam, in a special vacuum annealing procedure the hoses are baked-out at approx. 1040 °C under forming gas. In this process, the metal hose is simultaneously soft-annealed and thus receives its extremely flexibility property. The flexibility makes complicated line runs with small bending radii possible.

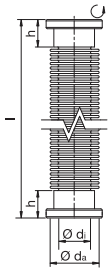
The novotek metal spring bellows are corrugated metal bellows. The corrugated sections that run concentrically and parallel to one another give the metal spring bellows axial, angular and lateral mobility, whereby combinations of this are also possible. Metal spring bellows are not annealed.

Area of application:
The novotek metal hose connections and metal spring bellows can be used as a mobile vacuum line. If they are used, ensure that the metal hoses can only execute bending movements in a lateral direction. Dynamic axial movements, i.e. buckling or pulling apart both in axial direction as well as torsional movement can only be executed by metal spring bellows.

Important comment: During evacuation of metal hoses as well as metal spring bellows, the air pressure applied from the outside results in a considerable force acting on the flanges, which causes compression. Only the spring power of the hose and bellows counteracts this. It may be necessary to compensate for the forces that develop.

CF corrugated hose, extremely flexible, 1 flange, rotatable

> All technical data and properties apply at normal air pressure of 1013 mbar and a temperature of 20 °C
> **Extremely flexible thanks to soft annealing**
> Pressure range: 10^{-9}mbar
> Temperature range 1.4306: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
> Special lengths upon request
* Take sealing materials and connecting elements into consideration



Flange 1.4306 (304L) / hose 1.4404

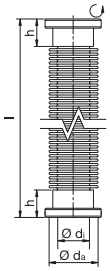
Nominal width DN	Total length [mm]	Corrugated hose dia.da [mm]	Corrugated hose dia.di [mm]	h [mm]	One-time movement radius R_{st} [mm]	Frequent movement radius R_b [mm]	Maximum pressure [bar]	Article no.
16	250	22.8	16.2	35	26	140	1.0	7901R
40	250	52	40.1	55	59	240	1.0	7902R
63	250	80	65	75	90	330	1.0	7903R
100	250	120	100	80	131	530	1.0	7904R
16	500	22.8	16.2	35	26	140	1.0	7911R
40	500	52	40.1	55	59	240	1.0	7912R
63	500	80	65	75	90	330	1.0	7913R
100	500	120	100	80	131	530	1.0	7914R
16	750	22.8	16.2	35	26	140	1.0	7931R
40	750	52	40.1	55	59	240	1.0	7932R
63	750	80	65	75	90	330	1.0	7933R
100	750	120	100	80	131	530	1.0	7934R
16	1000	22.8	16.2	35	26	140	1.0	7921R
40	1000	52	40.1	55	59	240	1.0	7922R
63	1000	80	65	75	90	330	1.0	7923R
100	1000	120	100	80	131	530	1.0	7924R

Flange 1.4404 (316L) / hose 1.4404

Nominal width DN	Total length [mm]	Corrugated hose dia.da [mm]	Corrugated hose dia.di [mm]	h [mm]	One-time movement radius R_{st} [mm]	Frequent movement radius R_b [mm]	Maximum pressure [bar]	Article no.
16	250	22.8	16.2	35	26	140	1.0	7901R4
40	250	52	40.1	55	59	240	1.0	7902R4
63	250	80	65	75	90	330	1.0	7903R4
100	250	120	100	80	131	530	1.0	7904R4
16	500	22.8	16.2	35	26	140	1.0	7911R4
40	500	52	40.1	55	59	240	1.0	7912R4
63	500	80	65	75	90	330	1.0	7913R4
100	500	120	100	80	131	530	1.0	7914R4
16	750	22.8	16.2	35	26	140	1.0	7931R4
40	750	52	40.1	55	59	240	1.0	7932R4
63	750	80	65	75	90	330	1.0	7933R4
100	750	120	100	80	131	530	1.0	7934R4
16	1000	22.8	16.2	35	26	140	1.0	7921R4
40	1000	52	40.1	55	59	240	1.0	7922R4
63	1000	80	65	75	90	330	1.0	7923R4
100	1000	120	100	80	131	530	1.0	7924R4

CF corrugated hose, flexible, 1 flange, rotatable

> All technical data and properties apply at normal air pressure of 1013 mbar and a temperature of 20 °C
> **Flexible without annealing**
> Pressure range: 10^{-9}mbar
> Temperature range 1.4306: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
> Special lengths upon request
* Take sealing materials and connecting elements into consideration



Flange 1.4306 (304L) / hose 1.4404

Nominal width DN	Total length [mm]	Corrugated hose dia.da [mm]	Corrugated hose dia.di [mm]	h [mm]	One-time movement radius R_{st} [mm]	Frequent movement radius R_b [mm]	Maximum pressure [bar]	Article no.
16	250	22.8	16.2	35	26	140	1.0	7901RU
40	250	52	40.1	55	59	240	1.0	7902RU
63	250	80	65	75	90	330	1.0	7903RU
100	250	120	100	80	131	530	1.0	7904RU
16	500	22.8	16.2	35	26	140	1.0	7911RU
40	500	52	40.1	55	59	240	1.0	7912RU
63	500	80	65	75	90	330	1.0	7913RU
100	500	120	100	80	131	530	1.0	7914RU
16	1000	22.8	16.2	35	26	140	1.0	7921RU
40	1000	52	40.1	55	59	240	1.0	7922RU
63	1000	80	65	75	90	330	1.0	7923RU
100	1000	120	100	80	131	530	1.0	7924RU
16	750	22.8	16.2	35	26	140	1.0	7931RU
40	750	52	40.1	55	59	240	1.0	7932RU
63	750	80	65	75	90	330	1.0	7933RU
100	750	120	100	80	131	530	1.0	7934RU

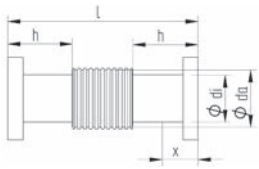
Flange 1.4404 (316L) / hose 1.4404

Nominal width DN	Total length [mm]	Corrugated hose dia.da [mm]	Corrugated hose dia.di [mm]	h [mm]	One-time movement radius R_{st} [mm]	Frequent movement radius R_b [mm]	Maximum pressure [bar]	Article no.
16	250	22.8	16.2	35	26	140	1.0	7901RU4
40	250	52	40.1	55	59	240	1.0	7902RU4
63	250	80	65	75	90	330	1.0	7903RU4
100	250	120	100	80	131	530	1.0	7904RU4
16	500	22.8	16.2	35	26	140	1.0	7911RU4
40	500	52	40.1	55	59	240	1.0	7912RU4
63	500	80	65	75	90	330	1.0	7913RU4
100	500	120	100	80	131	530	1.0	7914RU4
16	750	22.8	16.2	35	26	140	1.0	7931RU4
40	750	52	40.1	55	59	240	1.0	7932RU4
63	750	80	65	75	90	330	1.0	7933RU4
100	750	120	100	80	131	530	1.0	7934RU4
16	1000	22.8	16.2	35	26	140	1.0	7921RU4
40	1000	52	40.1	55	59	240	1.0	7922RU4
63	1000	80	65	75	90	330	1.0	7923RU4
100	1000	120	100	80	131	530	1.0	7924RU4

CF metal spring bellows 1.4306 / 1.4404 / 1.4571

> Pressure range: 10^{-9}mbar
> 10000 load alternation at 20 °C and 1013 mbar standard air pressure
> Temperature range: –196 °C to 300 °C 1.4306*
> Temperature range: –196 °C to 350 °C 1.4404 / 1.4571*

* Take sealing materials and connecting elements into consideration



Flange 1.4306 / connection pipe 1.4404 / bellows 1.4571

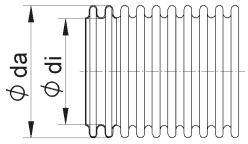
Nominal width DN	Bellows inside diameter dia.di [mm]	Bellows outside diameter dia.da [mm]	Neutral length l [mm]	Axial stroke x [mm]	h [mm]	Article no.
16	15	21	110	± 6	35	7991R
40	40	60	160	± 12	55	7992R
63	65.5	90	220	± 18	75	7993R
100	105	132	230	± 18	80	7994R
160	153	180	270	± 14	85	7995R
200	-	-	285	± 12	85	7996R
250	250	286	300	± 12	85	7997R

Flange 1.4404 / connection pipe 1.4404 / bellows 1.4571

Nominal width DN	Bellows inside diameter dia.di [mm]	Bellows outside diameter dia.da [mm]	Neutral length l [mm]	Axial stroke x [mm]	h [mm]	Article no.
16	15	21	110	± 6	35	7991R4
40	40	60	160	± 12	55	7992R4
63	65.5	90	220	± 18	75	7993R4
100	105	132	230	± 18	80	7994R4
160	153	180	270	± 14	85	7995R4
200	-	-	285	± 12	85	7996R4
250	250	286	300	± 12	85	7997R4

CF corrugated hose, extremely flexible, sold by the metre 1.4404

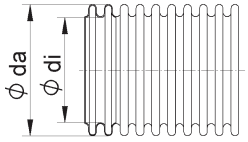
> Available in lengths of 100 mm to 5000 mm
> When ordering, specify desired length additionally in text form
> Pressure range: 10^{-9}mbar
> Temperature range: –196 °C to 350 °C*
* Take sealing materials and connecting elements into consideration



Nominal width DN	Total length l [mm]	dia.di [mm]	dia.da [mm]	One-time movement radius R_{st} [mm]	HH frequent movement radius R_b [mm]	Maximum pressure [bar]	Article no.
16	1000	16.2	22.8	26	140	2.5	7971
40	1000	40.1	52	59	240	1.8	7972
63	1000	65	80	90	330	1.7	7973
100	1000	100	120	131	530	1.3	7974

CF corrugated hose, extremely flexible, sold by the metre 1.4404

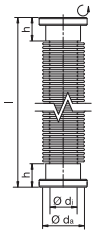
> Available in lengths of 100 mm to 5000 mm
> When ordering, specify desired length additionally in text form
> Pressure range: 10^{-9}mbar
> Temperature range: –196 °C to 350 °C*
* Take sealing materials and connecting elements into consideration



Nominal width DN	Total length l [mm]	dia.di [mm]	dia.da [mm]	One-time movement radius R_{st} [mm]	HH frequent movement radius R_b [mm]	Maximum pressure [bar]	Article no.
16	1000	16.2	22.8	26	140	2.5	7971U
40	1000	40.1	52	59	240	1.8	7972U
63	1000	65	80	90	330	1.7	7973U
100	1000	100	120	131	530	1.3	7974U

Price example, special length CF corrugated hose with flange

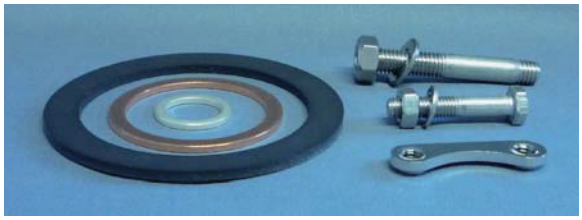
> Available in lengths of 100 mm to 5000 mm
> When ordering, specify desired length additionally in text form
> Pressure range: 10^{-9}mbar
> Temperature range: –196 °C to 300 °C(1.4301)/350 °C(1.4404)*
* Take sealing materials and connecting elements into consideration



Price example:

High-grade steel hose, extremely flexible with flange connection, one side rotatable, NW100 l = 2700 mm contains:	Article no.
High-grade steel hose with CF flange connection, one side rotatable, extremely flexible, NW100 l = 1000 mm in 1.4306 (304L)	7924R
High-grade steel hose, extremely flexible, NW 100, sold by the metre, 1.7 m	7974x1.7
High-grade steel hose with CF flange connection, one side rotatable, extremely flexible CF NW100 l = 2700 mm in 1.4306 (304L)	**7924 x2.7**

CF seal components



Properties:

- metallic joint
- bake-out capacity up to 450 °C
- combinable depending on application area
- use thread lubricant for screw connections
- when baking out, use silver plated seals

Description:

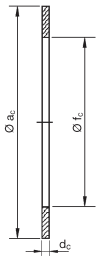
The CF seal components are required to establish a metallic UHV-tight connection. The standard sealing material used is oxygen-free OFHC copper. The Cu sealing washer can only be used once and for temperatures up to 200 °C. To prevent oxidation and for temperatures up to 450 °C, silver-plated copper seals are used. For test purposes and pressures up to $1x10^{-7}$mbar, CF Viton seals, which can be used several times, are often used. The CF connecting components are suitable for establishing up a reliable flange connection. The screws are compiled in various sets corresponding to the usage and handling. To guarantee fast and easy assembly of flanges with smaller nominal widths, DUO nuts are often used.

Important note:

When baking out CF connections and components, ensure that heating up and cooling and is carried out uniformly and slowly. Leaks and stress occur at the flanges due to high temperature differences.

High temperature gradients must be avoided in all circumstances!

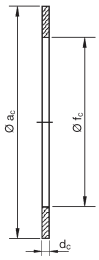
CF copper seal made of OFHC copper, unannealed



> Pressure range: 10^{-13} mbar to 1.0 bar
> Temperature range: –196 °C to 200 °C
> Can only be used once

Nominal width DN	dia.ac [mm]	dia.fc [mm]	dc [mm]	Packaging unit [pcs.]	Article no.
16	21	16	2	10	7201
16	21	16	2	1	7201-S
40	48	39	2	10	7202
40	48	39	2	1	7202-S
63	82	63	2	10	7203
63	82	63	2	1	7203-S
100	120	101	2	10	7204
100	120	101	2	1	7204-S
160	171	152	2	5	7205
160	171	152	2	1	7205-S
200	222	203	2	5	7206
200	222	203	2	1	7206-S
250	273	254	2	5	7207
250	273	254	2	1	7207-S

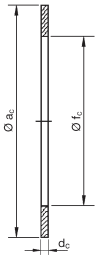
CF copper seal made of OFHC copper, soft-annealed



> Pressure range: 10^{-13} mbar to 1.0 bar
> Temperature range: –196 °C to 200 °C
> Soft-annealed, therefore suitable for aluminium flanges, inspection glasses and window flanges
> Can only be used once

Nominal width DN	dia.ac [mm]	dia.fc [mm]	dc [mm]	Packaging unit [pcs.]	Article no.
16	21	16	2	5	7201W
16	21	16	2	1	7201W-S
40	48	39	2	5	7202W
40	48	39	2	1	7202W-S
63	82	63	2	5	7203W
63	82	63	2	1	7203W-S
100	120	101	2	5	7204W
100	120	101	2	1	7204W-S
160	171	152	2	5	7205W
160	171	152	2	1	7205W-S
200	222	203	2	5	7206W
200	222	203	2	1	7206W-S
250	273	254	2	5	7207W
250	273	254	2	1	7207W-S

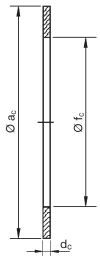
CF copper seal made of OFHC copper, silver-plated



> Pressure range: 10^{-13} mbar to 1.0 bar
> Temperature range: –196 °C to 450 °C
> Can only be used once

Nominal width DN	dia.ac [mm]	dia.fc [mm]	dc [mm]	Packaging unit [pcs.]	Article no.
16	21	16	2	5	7211
16	21	16	2	1	7211-S
40	48	39	2	5	7212
40	48	39	2	1	7212-S
63	82	63	2	5	7213
63	82	63	2	1	7213-S
100	120	101	2	5	7214
100	120	101	2	1	7214-S
160	171	152	2	5	7215
160	171	152	2	1	7215-S
200	222	203	2	5	7216
200	222	203	2	1	7216-S
250	273	254	2	5	7217
250	273	254	2	1	7217-S

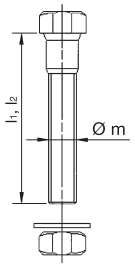
CF seal made of FKM/FPM



> Pressure range: 10^{-7} mbar to 1.0 bar
> Temperature range: –20 °C to 160 °C
> Can be used several times

Nominal width DN	dia.ac [mm]	dia.fc [mm]	dc [mm]	Packaging unit [pcs.]	Article no.
16	21	16	3	3	7251
16	21	16	2	1	7251-S
40	48	37	3	3	7252
40	48	37	2	1	7252-S
63	82	63	3	3	7253
63	82	63	2	1	7253-S
100	120	101	3	3	7254
100	120	101	2	1	7254-S
160	171	152	3	3	7255
160	171	152	2	1	7255-S
200	222	203	3	3	7256
200	222	203	2	1	7256-S
250	273	254	3	3	7257
250	273	254	2	1	7257-S

CF hexagon screw set A2

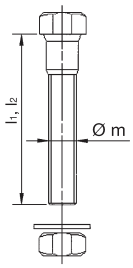


> Screw set as shown with screw, nut and washer
> Suitable for the assembly of 2 flanges with through-holes
> Can be used several times

For flanges with through-holes

Nominal width DN	L_1 [mm]	m [thread]	Packaging unit [pcs.]	Article no.
16	20	M4	6	7001
40	35	M6	6	7002
63	50	M8	8	7003
100	55	M8	16	7004
160	55	M8	20	7005
200	60	M8	24	7006
250	60	M8	32	7007

CF hexagon screw set A2

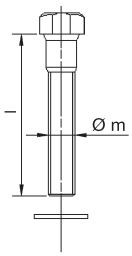


> Screw set as shown with screw, nut and washer
> Suitable for the assembly of 1 flange with through-holes and 1 double-side flange
> Can be used several times

For double-sided CF flanges

Nominal width DN	L_2 [mm]	m [thread]	Packaging unit [pcs.]	Article no.
16	35	M4	6	7011
40	50	M6	6	7012
63	60	M8	8	7013
100	70	M8	16	7014
160	80	M8	20	7015
200	90	M8	24	7016
250	90	M8	32	7017

CF hexagon screw set A2

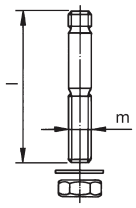


> Screw set as shown with screw, and washer
> Suitable for assembly of 2 flanges with 1x through-hole and one thread.
> Can be used several times

For CF flanges with threaded holes

Nominal width DN	L_2 [mm]	m [thread]	Packaging unit [pcs.]	Article no.
16	16	M4	6	7021
40	25	M6	6	7022
63	30	M8	8	7023
100	35	M8	16	7024
160	35	M8	20	7025
200	45	M8	24	7026
250	50	M8	32	7027

CF stud screw set A2

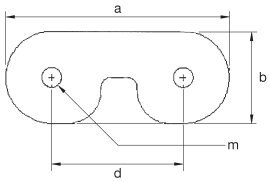


> Screw set as shown with stud screw, nut and washer
> Suitable for assembly of 2 flanges with 1x through-hole and one thread.
> Can be used several times

For CF flanges with threaded holes

Nominal width DN	l [mm]	m [thread]	Packaging unit [pcs.]	Article no.
16	25	M4x20	6	8031
40	36	M6x30	6	8032
63	48	M8x40	8	8033
100	53	M8x45	16	8034
160	53	M8x45	20	8035
200	53	M8x45	24	8036
250	53	M8x45	32	8037

CF Duo nut



> Duo nut as shown
> Suitable for the assembly of 2 flanges with through-holes
> Suitable for fast assembly and with space problems

For CF flanges with threaded holes

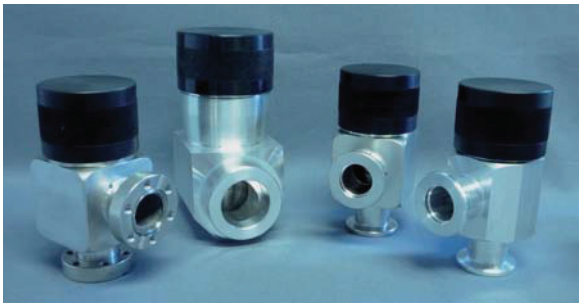
Nominal width DN	a [mm]	b [mm]	m [thread]	d [mm]	Packaging unit [pcs.]	Article no.
16	20.5	7	M4	13	25	7051
40	40	11	M6	29	25	7052
63	48	13	M8	35	25	7053
100	44	12	M8	25	25	7054
160	44	12	M8	28	25	7055

CF flange cap, plastic

Nominal width DN	Article no.
16	7081
40	7082
63	7083
100	7084
160	7085
200	7086
250	7087

Valves

Corner and full-way valves, manually actuated and electro-pneumatic



Properties

- high leak rate (<10^{-8}mbarl/s)
- single-acting pneumatic unit
- high conductance
- spring bellows and internal components made of high-grade steel
- valve face and housing are FKM-sealed
- reliable function in all installation positions
- long service life and low-maintenance

Description:

The novotek corner and full-way valves made of aluminium and high-grade steel meet special leak-tightness requirements of high-vacuum valves. To achieve this leak-tightness, novotek uses spring bellows seals in conjunction with FKM-sealed connecting components. The valve housing is manufactured from a drawn aluminium profile or from high-grade steel solid material. The connection between valve plate, spring bellows and sealing plate is laser-welded and guarantees high-vacuum sealing at all times.

Pneumatic valves:

The pneumatic unit is single-acting. This means that the valve is de-energized and closed unpressurised. The valve is opened either directly via compressed air or controlled via an optionally integrated pilot valve that forwards the compressed air to the valve. For special applications, which are usually safety-relevant, the valves can also be supplied in the version open when de-energised and depressurised. The position indicator (optional) signals the open or closed position. Valves supplied without position indicator and control valve signal the open and closed position by means of a pin on the valve cover.

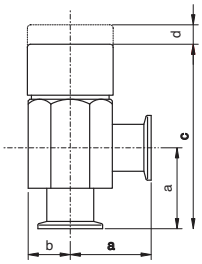
Area of application:

They are used as shut-off valves, vent valves and high-vacuum valves, have a light weight, a small overall height and a high conductivity value. They can be installed as required and fail-safe in compact systems. The electro-pneumatically actuated valves are suitable for an automated vacuum system (usually controlled via PLC).

Materials:

The different materials are compiled as follows:
Aluminium housing 3.1645, high-grade steel housing and high-grade steel internal parts 1.4301 or 1.4305. Metal bellows made of high-grade steel 1.4571 and seals made of FKM/FPM.

Corner valves KF / ISO-K, manually actuated, aluminium (3.1645)



> Bellows sealed 1.4571
> Internal parts made of 1.4301
> Rotary knob aluminium-anodized
* Take sealing materials and connecting elements into consideration

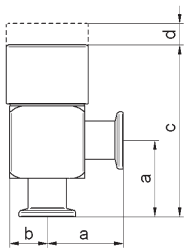
Nominal width DN	a [mm]	b [mm]	c [mm]	d [mm]	Conductivity value [l/s]	Leak-tightness [mbarl/s]	Pressure range	Service life	Bake-out temperature [°C]	Weight [kg]	Article no.
16	40	20	91	8	5.2	$<5*10^{-9}$	1×10^{-8}	300000	140	0.3	3002
25	50	25	114	12	12.4	$<5*10^{-9}$	1×10^{-8}	300000	140	0.5	3004
40	65	35	139	16	33.5	$<5*10^{-9}$	1×10^{-8}	300000	140	1.1	3006
50	70	40	144	16	62.7	$<5*10^{-9}$	1×10^{-8}	300000	140	1.4	3007
63*	88	53	242	19	160	$<5*10^{-9}$	1×10^{-8}	300000	140	3.2	8002

> The nominal widths marked with ***** are VAT valves

Gasket kit

Nominal width DN	Article no.
16	31993002
25	31993004
40	31993006
50	31993007
63	31998002

Corner valves KF / ISO-K manually actuated, high-grade steel (1.4301)



> Bellows sealed 1.4571
> Internal parts made of 1.4301
> Rotary knob aluminium-anodized
* Take sealing materials and connecting elements into consideration

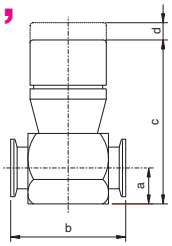
Nominal width DN	a [mm]	b [mm]	c [mm]	d [mm]	Conductivity value [l/s]	Leak-tightness [mbarl/s]	Pressure range	Service life	Bake-out temperature [°C]	Weight [kg]	Article no.
16	40	20	90	8	5.4	$1*10^{-8}$	$1x10^{-8}$	300000	160	0.5	3012
25	50	25	112	12	12.8	$1*10^{-8}$	$1x10^{-8}$	300000	160	0.9	3014
40	65	32	140	16	34.2	$1*10^{-8}$	$1x10^{-8}$	300000	160	1.9	3016
50	70	53	150	16	64	$1*10^{-8}$	$1x10^{-8}$	300000	160	2.2	3017
63*	88	53	170	19	163	$1*10^{-8}$	$1x10^{-8}$	300000	160	3.2	8012

> The nominal widths marked with ***** are VAT valves

Gasket kit

Nominal width DN	Article no.
16	31993012
25	31993014
40	31993016
50	31993017
63	31998012

KF full-way valves, manually actuated, aluminium (3.1645)



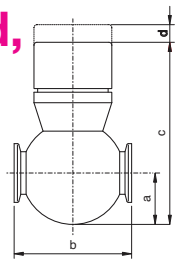
> Bellows sealed 1.4571
> Internal parts made of 1.4301
> Rotary knob aluminium-anodized
* Take sealing materials and connecting elements into consideration

Nominal width DN	a [mm]	b [mm]	c [mm]	d [mm]	Conductivity value [l/s]	Leak-tightness [mbarl/s]	Pressure range	Service life	Bake-out temperature [°C]	Weight [kg]	Article no.
16	20	70	86	8	2	$<5*10^{-9}$	$1x10^{-8}$	300000	140	0.32	3022
25	25	80	108.5	12	8	$<5*10^{-9}$	$1x10^{-8}$	300000	140	0.69	3024
40	35	110	150	16	16.5	$<5*10^{-9}$	$1x10^{-8}$	300000	140	1.05	3026

Gasket kit

Nominal width DN	Article no.
16	31993022
25	31993024
40	31993026

KF full-way valves, manually actuated, high-grade steel (1.4301)



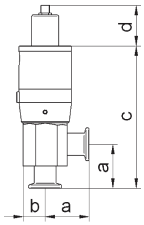
> Bellows sealed 1.4571
> Internal parts made of 1.4301
> Rotary knob aluminium-anodized
* Take sealing materials and connecting elements into consideration

Nominal width DN	a [mm]	b [mm]	c [mm]	d [mm]	Conductivity value [l/s]	Leak-tightness [mbarl/s]	Pressure range	Service life	Bake-out temperature [°C]	Weight [kg]	Article no.
16	30	70	105	8	2.5	$<5*10^{-9}$	$1x10^{-8}$	300000	160	0.65	3032
25	35	80	124	12	9.5	$<5*10^{-9}$	$1x10^{-8}$	300000	160	0.71	3034
40	35	80	129	12	18	$<5*10^{-9}$	$1x10^{-8}$	300000	160	1.2	3036

Gasket kit

Nominal width DN	Article no.
16	31993032
25	31993034
40	31993036

Corner valves KF / ISO-K, electro-pneumatic, aluminium (3.1645)



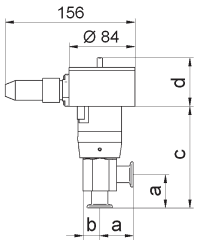
> Please specify control voltage when ordering!
> Possible control voltage is **24V** and 230V **(special voltage upon request)**
> Bellows sealed 1.4571
> Internal parts made of 1.4301
> Electro-pneumatic drive unit, aluminium housing 3.1645
> All data that is not specified can be obtained from Manual valves
* Take sealing materials and connecting elements into consideration

NW DN	a [mm]	b [mm]	c [mm]	d [mm]	Weight [kg]	Compr. air [bar]	Closing time [ms]	With position indicator	With control valve	Version closed	Version open	Article no.
16	40	20	133	–	0.5	6-8	150			X (top)		310212
16	40	20	133	40	0.5	6-8	150	X		X (top)		310222
16	40	20	120	58	0.9	6-8	150		X	X		310232
16	40	20	120	58	0.9	6-8	150	X	X	X		310242
16	40	20	133	–	0.5	6-8	150				X (top)	310211
16	40	20	133	40	0.5	6-8	150	X			X (top)	310221
16	40	20	120	58	0.9	6-8	150		X		X	310231
16	40	20	120	58	0.9	6-8	150	X	X		X	310241
25	50	25	154	–	0.63	6-8	200			X (top)		310412
25	50	25	154	40	0.7	6-8	200	X		X (top)		310422
25	50	25	145	58	1.2	6-8	200		X	X		310432
25	50	25	145	58	1.2	6-8	200	X	X	X		310442
25	50	25	154	–	0.63	6-8	200				X (top)	310411
25	50	25	154	40	0.7	6-8	200	X			X (top)	310421
25	50	25	145	58	1.2	6-8	200		X		X	310431
25	50	25	145	58	1.2	6-8	200	X	X		X	310441
40	65	35	182	–	1.37	6-8	300			X (top)		310612
40	65	35	182	40	1.37	6-8	300	X		X (top)		310622
40	65	35	170	58	1.6	6-8	300		X	X		310632
40	65	35	170	58	1.6	6-8	300	X	X	X		310642
40	65	35	182	–	1.37	6-8	300				X (top)	310611
40	65	35	182	40	1.37	6-8	300	X			X (top)	310621
40	65	35	170	58	1.6	6-8	300		X		X	310631
40	65	35	170	58	1.6	6-8	300	X	X		X	310641
50 *	70	-	169	10.5	1.45	4-8	650			X		310712
50 *	70	-	169	10.5		4-8	650	X		X		310722
50 *	70	-	169	10.5		4-8	650		X	X		310732
50 *	70	-	169	10.5		4-8	650	X	X	X		310742
50 *	70	-	169	10.5	1.45	4-8	650				X	310711
50 *	70	-	169	10.5		4-8	650	X			X	310721
50 *	70	-	169	10.5		4-8	650		X		X	310731
50 *	70	-	169	10.5		4-8	650	X	X		X	310741
63 *	88	-	197	32.6	2.9	4-8	700			X		810212
63 *	88	-	197	32.6		4-8	700	X		X		810222
63 *	88	-	197	32.6		4-8	700		X	X		810232
63 *	88	-	197	32.6		4-8	700	X	X	X		810242
63 *	88	-	197	32.6	2.9	4-8	700				X	810211
63 *	88	-	197	32.6		4-8	700	X			X	810221
63 *	88	-	197	32.6		4-8	700		X		X	810231
63 *	88	-	197	32.6		4-8	700	X	X		X	810241

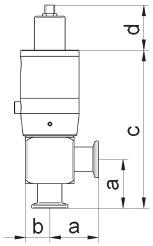
> The nominal widths marked with * are VAT valves!

Gasket kit

Nominal width DN	Article no.
16	31993102
25	31993104
40	31993106
50	31993107
63	31998102



Corner valves KF / ISO-K electro-pneumatically actuated, high-grade steel (1.4301)



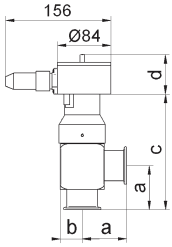
> Please specify control voltage when ordering!
> Possible control voltage is **24V** and 230V **(special voltage upon request)**
> Bellows sealed 1.4571
> Internal parts made of 1.4301
> Electro-pneumatic drive unit, aluminium housing 3.1645
> All data that is not specified can be obtained from Manual valves
* Take sealing materials and connecting elements into consideration

NW DN	a [mm]	b [mm]	c [mm]	d [mm]	Weight [kg]	Compr. air [bar]	Closing time [ms]	With position indicator	With control valve	Version closed	Version open	Article no.
16	40	20	130	–	0.8	6-8	150			X (top)		311212
16	40	20	130	40	0.8	6-8	150	X		X (top)		311222
16	40	20	122	58	1.4	6-8	150		X	X		311232
16	40	20	122	58	1.4	6-8	150	X	X	X		311242
16	40	20	130	–	0.8	6-8	150				X (top)	311211
16	40	20	130	40	0.8	6-8	150	X			X (top)	311221
16	40	20	122	58	1.4	6-8	150		X		X	311231
16	40	20	122	58	1.4	6-8	150	X	X		X	311241
25	50	25	154	–	1.28	6-8	200			X (top)		311412
25	50	25	154	40	1.28	6-8	200	X		X (top)		311422
25	50	25	145	58	1.8	6-8	200		X	X		311432
25	50	25	145	58	1.8	6-8	200	X	X	X		311442
25	50	25	154	–	1.28	6-8	200				X (top)	311411
25	50	25	154	40	1.28	6-8	200	X			X (top)	311421
25	50	25	145	58	1.8	6-8	200		X		X	311431
25	50	25	145	58	1.8	6-8	200	X	X		X	311441
40	65	35	180	–	1.50	6-8	300			X (top)		311612
40	65	35	180	40	2.0	6-8	300	X		X (top)		311622
40	65	35	170	58	2.6	6-8	300		X	X		311632
40	65	35	170	58	2.6	6-8	300	X	X	X		311642
40	65	35	180	–	1.50	6-8	300				X (top)	311611
40	65	35	180	40	2.0	6-8	300	X			X (top)	311621
40	65	35	170	58	2.6	6-8	300		X		X	311631
40	65	35	170	58	2.6	6-8	300	X	X		X	311641
50 *	70	-	169	10.5	1.61	4-8	650			X		311712
50 *	70	-	169	10.5		4-8	650	X		X		311722
50 *	70	-	169	10.5		4-8	650		X	X		311732
50 *	70	-	169	10.5		4-8	650	X	X	X		311742
50 *	70	-	169	10.5	1.61	4-8	650				X	311711
50 *	70	-	169	10.5		4-8	650	X			X	311721
50 *	70	-	169	10.5		4-8	650		X		X	311731
50 *	70	-	169	10.5		4-8	650	X	X		X	311741
63 *	88	-	197	32.6	3.8	4-8	700			X		811212
63 *	88	-	197	32.6		4-8	700	X		X		811222
63 *	88	-	197	32.6		4-8	700		X	X		811232
63 *	88	-	197	32.6		4-8	700	X	X	X		811242
63 *	88	-	197	32.6	3.8	4-8	700				X	811211
63 *	88	-	197	32.6		4-8	700	X			X	811221
63 *	88	-	197	32.6		4-8	700		X		X	811231
63 *	88	-	197	32.6		4-8	700	X	X		X	811241

> The nominal widths marked with * are VAT valves.

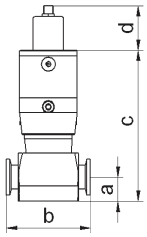
Gasket kit

Nominal width DN	Article no.
16	31993112
25	31993114
40	31993116
50	31993117
63	31998112



KF full-way valves, electro-pneumatically actuated, aluminium (3.1645)

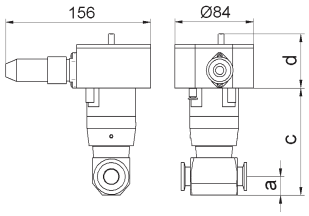
> Please specify control voltage when ordering!
> Possible control voltage is **24V** and 230V **(special voltage upon request)**
> Bellows sealed 1.4571
> Internal parts made of 1.4301
> Electro-pneumatic drive unit, aluminium housing 3.1645
> All data that is not specified can be obtained from Manual valves
* Take sealing materials and connecting elements into consideration



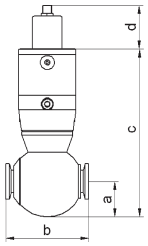
NW DN	a [mm]	b [mm]	c [mm]	d [mm]	Weight [kg]	Compr. air [bar]	Closing time [ms]	With position indicator	With control valve	Version closed	Version open	Article no.
16	20	70	126	–	0.47	6-8	150			X (top)		312212
16	20	70	126	40	0.47	6-8	150	X		X (top)		312222
16	20	70	118	58	1.1	6-8	150		X	X		312232
16	20	70	118	58	1.1	6-8	150	X	X	X		312242
16	20	70	126	–	0.47	6-8	150				X (top)	312211
16	20	70	126	40	0.47	6-8	150	X			X (top)	312221
16	20	70	118	58	1.1	6-8	150		X		X	312231
16	20	70	118	58	1.1	6-8	150	X	X		X	312241
25	25	80	152	–	0.76	6-8	200			X (top)		312412
25	25	80	152	40	0.76	6-8	200	X		X (top)		312422
25	25	80	142	58	1.3	6-8	200		X	X		312432
25	25	80	142	58	1.3	6-8	200	X	X	X		312442
25	25	80	152	–	0.76	6-8	200				X (top)	312411
25	25	80	152	40	0.76	6-8	200	X			X (top)	312421
25	25	80	142	58	1.3	6-8	200		X		X	312431
25	25	80	142	58	1.3	6-8	200	X	X		X	312441
40	35	110	185	–	1.5	6-8	300			X (top)		312612
40	35	110	185	40	1.5	6-8	300	X		X (top)		312622
40	35	110	146	58	2	6-8	300		X	X		312632
40	35	110	146	58	2	6-8	300	X	X	X		312642
40	35	110	185	–	1.5	6-8	300				X (top)	312611
40	35	110	185	40	1.5	6-8	300	X			X (top)	312621
40	35	110	146	58	2	6-8	300		X		X	312631
40	35	110	146	58	2	6-8	300	X	X		X	312641

Gasket kit

Nominal width DN	Article no.
16	31993122
25	31993124
40	31993126



KF full-way valves, electro-pneumatically actuated, high-grade steel (1.4301)

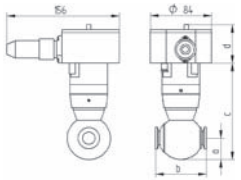


> Please specify control voltage when ordering!
> Possible control voltage is **24V** and 230V **(special voltage upon request)**
> Bellows sealed 1.4571
> Internal parts made of 1.4301
> Electro-pneumatic drive unit, aluminium housing 3.1645
> All data that is not specified can be obtained from Manual valves
* Take sealing materials and connecting elements into consideration

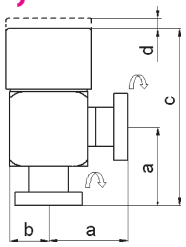
NW DN	a [mm]	b [mm]	c [mm]	d [mm]	Weight [kg]	Compr. air [bar]	Closing time [ms]	With position indicator	With control valve	Version closed	Version open	Article no.
16	30	70	145	–	1.0	6-8	150			X (top)		313212
16	30	70	145	40	1.0	6-8	150	X		X (top)		313222
16	30	70	135	58	1.5	6-8	150		X	X		313232
16	30	70	135	58	1.5	6-8	150	X	X	X		313242
16	30	70	145	–	1.0	6-8	150				X (top)	313211
16	30	70	145	40	1.0	6-8	150	X			X (top)	313221
16	30	70	135	58	1.5	6-8	150		X		X	313231
16	30	70	135	58	1.5	6-8	150	X	X		X	313241
25	35	80	166	–	1.28	6-8	200			X (top)		313412
25	35	80	166	40	1.28	6-8	200	X		X (top)		313422
25	35	80	157	58	1.8	6-8	200		X	X		313432
25	35	80	157	58	1.8	6-8	200	X	X	X		313442
25	35	80	166	–	1.28	6-8	200				X (top)	313411
25	35	80	166	40	1.28	6-8	200	X			X (top)	313421
25	35	80	157	58	1.8	6-8	200		X		X	313431
25	35	80	157	58	1.8	6-8	200	X	X		X	313441
40	35	80	170	–	1.5	6-8	300			X (top)		313612
40	35	80	170	40	1.5	6-8	300	X		X (top)		313622
40	35	80	163	58	1.9	6-8	300		X	X		313632
40	35	80	163	58	1.9	6-8	300	X	X	X		313642
40	35	80	170	–	1.5	6-8	300				X (top)	313611
40	35	80	170	40	1.5	6-8	300	X			X (top)	313621
40	35	80	163	58	1.9	6-8	300		X		X	313631
40	35	80	163	58	1.9	6-8	300	X	X		X	313641

Gasket kit

Nominal width DN	Article no.
16	31993132
25	31993134
40	31993136



CF corner valves, manually actuated, high-grade steel (1.4301)



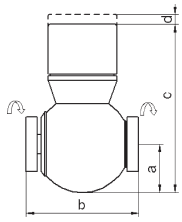
> Flanges with thread
> Bellows sealed 1.4571
> Internal parts made of 1.4301
> Rotary knob aluminium-anodized
* Take sealing materials and connecting elements into consideration

Nominal width DN	a [mm]	b [mm]	c [mm]	d [mm]	Conductivity value [l/s]	Leak-tightness [mbarl/s]	Pressure range	Service life	Bake-out temperature [°C]	Weight [kg]	Article no.
16	40	20	96	8	5.7	$<5*10^{-9}$	$1*10^{-8}$ mbar to 1 bar	300000	160	0.5	7031
40	63	35	145	16	37.7	$<5*10^{-9}$	$1*10^{-8}$ mbar to 1 bar	300000	160	2.3	7032
63	105	53	187	19	90	$<5*10^{-9}$	$1*10^{-8}$ mbar to 1 bar	300000	160	4.4	7033

Gasket kit

Nominal width DN	Article no.
16	31997031
40	31997032
63	31997033

CF full-way valves, manually actuated high-grade steel (1.4301)



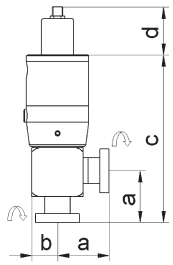
> Flanges with thread
> Bellows sealed 1.4571
> Internal parts made of 1.4301 / 1.4305
> Rotary knob aluminium-anodized
* Take sealing materials and connecting elements into consideration

Nominal width DN	a [mm]	b [mm]	c [mm]	d [mm]	Conductivity value [l/s]	Leak-tightness [mbarl/s]	Pressure range	Service life	Bake-out temperature [°C]	Weight [kg]	Article no.
16	30	70	105	8	5.7	$<5*10^{-9}$	$1*10^{-8}$ mbar to 1 bar	300000	160	0.5	7332
40	35	84	130	16	37.7	$<5*10^{-9}$	$1*10^{-8}$ mbar to 1 bar	300000	160	2.3	7336

Gasket kit

Nominal width DN	Article no.
16	31997332
40	31997336

CF corner valves, electro-pneumatically actuated, high-grade steel (1.4301)

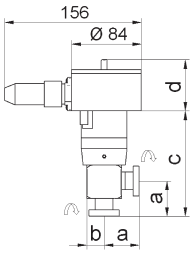


> Please specify control voltage when ordering!
> Possible control voltage is **24V** and 230V **(special voltage upon request)**
> Bellows sealed 1.4571
> Housing made of 1.4301 / internal parts made of 1.4301
> Electro-pneumatic drive unit, aluminium housing 3.1645
> All data that is not specified can be obtained from Manual valves
> Flanges with thread
* Take sealing materials and connecting elements into consideration

NW DN	a [mm]	b [mm]	c [mm]	d [mm]	Weight [kg]	Compr. air [bar]	Closing time [ms]	With position indicator	With control valve	Version closed	Version open	Article no.
16	40	20	130	40	0.8	6-8	150			X (top)		706112
16	40	20	130	40	0.8	6-8	150	X		X (top)		706122
16	40	20	120	58	1.3	6-8	150		X	X		706132
16	40	20	120	58	1.3	6-8	150	X	X	X		706142
16	40	20	130	40	0.8	6-8	150				X (top)	706111
16	40	20	130	40	0.8	6-8	150	X			X (top)	706121
16	40	20	172	58	1.3	6-8	150		X		X	706131
16	40	20	172	58	1.3	6-8	150	X	X		X	706141
40	63	35	176	40	2.3	6-8	300			X (top)		706212
40	63	35	176	40	2.3	6-8	300	X		X (top)		706222
40	63	35	168	58	2.5	6-8	300		X	X		706232
40	63	35	168	58	2.5	6-8	300	X	X	X		706242
40	63	35	176	40	2.3	6-8	300				X (top)	706211
40	63	35	176	40	2.3	6-8	300	X			X (top)	706221
40	63	35	220	58	2.5	6-8	300		X		X	706231
40	63	35	168	58	2.5	6-8	300	X	X		X	706241

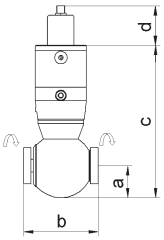
Gasket kit

Nominal width DN	Article no.
16	31997061
40	31997062



CF full-way valves, electro-pneumatic high-grade steel

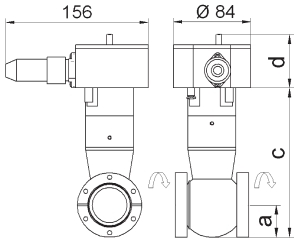
> Please specify control voltage when ordering!
> Possible control voltage is **24V** and 230V **(special voltage upon request)**
> Bellows sealed 1.4571
> Housing made of 1.4301 / internal parts made of 1.4301
> Electro-pneumatic drive unit, aluminium housing 3.1645
> All data that is not specified can be obtained from Manual valves
> Flanges with thread
* Take sealing materials and connecting elements into consideration



NW DN	a [mm]	b [mm]	c [mm]	d [mm]	Weight [kg]	Compr. air [bar]	Closing time [ms]	With position indicator	With control valve	Version closed	Ver-sion open	Article no.
16	30	70	145	–	1	6-8	150			X (top)		773212
16	30	70	145	40	1	6-8	150	X		X (top)		773222
16	30	70	135	58	1.4	6-8	150		X	X		773232
16	30	70	135	58	1.4	6-8	150	X	X	X		773242
16	30	70	145	–	1	6-8	150				X (top)	773211
16	30	70	145	40	1	6-8	150	X			X (top)	773221
16	30	70	135	58	1.4	6-8	150		X		X	773231
16	30	70	135	58	1.4	6-8	150	X	X		X	773241
40	35	84	170	–	1.8	6-8	300			X (top)		773612
40	35	84	170	40	1.8	6-8	300	X		X (top)		773622
40	35	84	163	58	2.2	6-8	300		X	X		773632
40	35	84	163	58	2.2	6-8	300	X	X	X		773642
40	35	84	170	–	1.8	6-8	300				X (top)	773611
40	35	84	170	40	1.8	6-8	300	X			X (top)	773621
40	35	84	163	58	2.2	6-8	300		X		X	773631
40	35	84	163	58	2.2	6-8	300	X	X		X	773641

Gasket kit

Nominal width DN	Article no.
16	31997732
40	31997736



Butterfly valves KF / ISO-K, manually actuated and electro-pneumatic

Properties:

- high leak rate (<10^{-8}mbarl/s)
- single-acting pneumatic unit
- high conductance
- internal parts made of high-grade steel
- FKM O-ring sealed
- optical position display (manual)
- long service life and low-maintenance
- compact design and light weight

Description:

The novotek butterfly valves made of aluminium and high-grade steel meet special leak-tightness requirements of high-vacuum valves. To achieve this leak-tightness, novotek uses O-ring connections with FKM-sealed connecting components. The valve housings are manufactured from aluminium or high-grade steel solid material. Thanks to their compact design, they are also used in areas that are otherwise reserved for gate valves. Closing is carried out by swivelling the viton-sealed valve plate into the housing sealing surface. The T handle, which permits simple actuation even for inaccessible attachments, also serves as an easily visible position display.

Pneumatic valves:

The pneumatic unit is single-acting. Upon request, it can also be supplied with a double-acting swivel drive. This means that the valve is de-energized and depressurised when closed. The valve is opened either directly via compressed air or controlled via a pilot valve that forwards the compressed air to the valve. The position indicator (optional) signals the open or closed position.

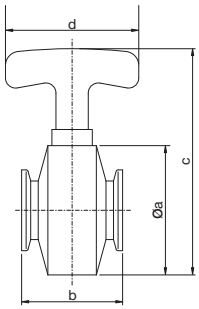
Area of application:

They are used as shut-off valves, vent valves and high-vacuum valves, have a light weight, a small overall height and a high conductivity value. They can be installed as required fail-safe in compact systems. The electro-pneumatically actuated valves are suitable for an automated vacuum system (usually controlled via PLC). They are also often used as a cost-effective alternative to gate valves if an optically free passage is not required.

Materials:

The different materials are compiled as follows: aluminium housing 3.1645, high-grade steel housing and high-grade steel internal parts 1.4301, 1.4404 and seals made of FKM/FPM.

Butterfly valves KF manual, aluminium (3.1645)



> Internal parts made of 1.4301, body made of aluminium 3.1645
> T handle made of plastic
> Can be used in high-vacuum area but not in the pressure range above 1 bar.
> Valve position display via T handle
> Almost completely free passage in open position.

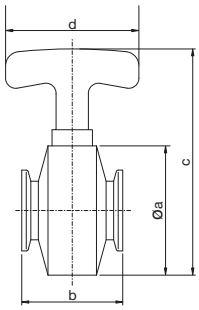
* Take sealing materials and connecting elements into consideration

Nominal width DN	a [mm]	b [mm]	c [mm]	d [mm]	Con-ductivity value [l/s]	Leak-tightness [mbarl/s]	Pressure range	Service life	Bake-out tempera-ture [°C]	Weight [kg]	Article no.
25	65	50	112	68	11	$<5*10^{-9}$	$5*10^{-9}$ mbar to 1 bar	20000	140	0.4	4002
40	80	50	129	80	31	$<5*10^{-9}$	$5*10^{-9}$ mbar to 1 bar	20000	140	0.5	4004
50	88	60	137	80	60	$<5*10^{-9}$	$5*10^{-9}$ mbar to 1 bar	20000	140	0.6	4005

Gasket kit for drive shaft and valve plate

Nominal width DN	Article no.
25	31994002
40	31994004
50	31994005

Butterfly valves KF manual, high-grade steel (1.4301)



> Internal parts made of 1.4301, body made of high-grade steel 1.4301
> T handle made of plastic
> Can be used in high-vacuum area but not in the pressure range above 1 bar.
> Valve position display via T handle
> Almost completely free passage in open position.

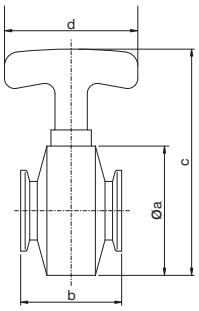
* Take sealing materials and connecting elements into consideration

Nominal width DN	a [mm]	b [mm]	c [mm]	d [mm]	Con-ductivity value [l/s]	Leak-tightness [mbarl/s]	Pressure range	Service life	Bake-out tempera-ture [°C]	Weight [kg]	Article no.
25	65	50	112	68	11	$<5*10^{-9}$	$5*10^{-9}$ mbar to 1 bar	20000	160	0.7	4012
40	80	50	129	80	31	$<5*10^{-9}$	$5*10^{-9}$ mbar to 1 bar	20000	160	1.0	4014
50	88	60	137	80	60	$<5*10^{-9}$	$5*10^{-9}$ mbar to 1 bar	20000	160	1.4	4015
63	88	115	143	80	60	<5*10-9	$5*10^{-9}$ mbar to 1 bar	20000	160	1.9	4016

Gasket kit for drive shaft and valve plate

Nominal width DN	Article no.
25	31994012
40	31994014
50	31994015
63	31994016

Butterfly valves KF manual, high-grade steel (1.4404)



> Internal parts and body made of high-grade steel 1.4404
> T handle made of plastic
> Can be used in high-vacuum area but not in the pressure range above 1 bar.
> Valve position display via T handle
> Almost completely free passage in open position.

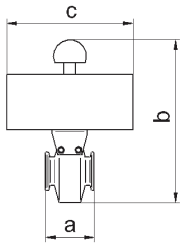
* Take sealing materials and connecting elements into consideration

Nominal width DN	a [mm]	b [mm]	c [mm]	d [mm]	Con-ductivity value [l/s]	Leak-tightness [mbarl/s]	Pressure range	Service life	Bake-out tempera-ture [°C]	Weight [kg]	Article no.
25	65	50	112	68	11	$<5*10^{-9}$	$5*10^{-9}$ mbar to 1 bar	20000	160	0.7	40124
40	80	50	129	80	31	$<5*10^{-9}$	$5*10^{-9}$ mbar to 1 bar	20000	160	1.0	40144
50	88	60	137	80	60	$<5*10^{-9}$	$5*10^{-9}$ mbar to 1 bar	20000	160	1.4	40154

Gasket kit for drive shaft and valve plate

Nominal width DN	Article no.
25	319940124
40	319940144
50	319940154

Butterfly valves KF electro-pneum., high-grade steel (1.4404)



> Please specify control voltage when ordering!
> Possible control voltage is **24V** and 230V **(special voltage upon request)**
> Single-acting, with spring reset (double-acting upon request)
> Can be used in high-vacuum area but not in the pressure range above 1 bar.
> Almost completely free passage in open position.
> Electro-pneumatic drive unit, aluminium housing 3.1645
> All data that is not specified can be obtained from Manual valves

* Take sealing materials and connecting elements into consideration

NW DN	a [mm]	b [mm]	c [mm]	Weight [kg]	Compr. air [bar]	Closing time [ms]	With position indicator	With control valve	Article no.
25	50	170	132	1.5	4-8	2.7			411212
25	50	170	132	1.5	4-8	2.7	X		411222
25	50	170	132	1.7	4-8	2.7		X	411232
25	50	170	132	1.7	4-8	2.7	X	X	411242
40	50	185	132	1.8	4-8	2.7			411412
40	50	185	132	1.8	4-8	2.7	X		411422
40	50	185	132	2.0	4-8	2.7		X	411432
40	50	185	132	2.0	4-8	2.7	X	X	411442

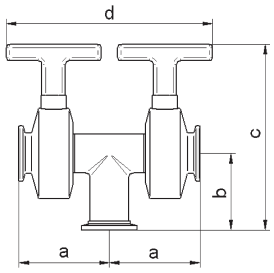
Gasket kit for drive shaft and valve plate

Nominal width DN	Article no.
25	31994112
40	31994114
50	31994115

3-way butterfly valve KF manual, high-grade steel 1.4404

> Body and internal parts 1.4404
> T handle made of plastic
> Can be used in high-vacuum area but not in the pressure range above 1 bar.
> Valve position display via T handle
> Almost completely free passage in open position.
> The valve is suitable as a vacuum manifold
> Special nominal widths of the side connections available upon request
> The valve permits four switching statuses and can be used as a T and L variant

* Take sealing materials and connecting elements into consideration



NW DN	a [mm]	b [mm]	c [mm]	d [mm]	Conductivity value [l/s] / single valve	Leak-tightness [mbarl/s]	Pressure range	Ser-vice life	Bake-out tempera-ture [°C]	Weight [kg]	Article no.
25	65	55	134	150	11	$<5*10^{-9}$	$5*10^{-9}$ mbar to 1 bar	20000	160		4074
40	75	65	155	180	31	$<5*10^{-9}$	$5*10^{-9}$ mbar to 1 bar	20000	160		4076
50	90	75	170	200	60	$<5*10^{-9}$	$5*10^{-9}$ mbar to 1 bar	20000	160		4077

dia. special nominal widths of the side connections available upon request

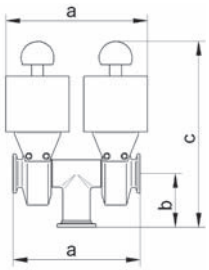
Gasket kit for drive shaft and valve plate

Nominal width DN	Article no.
25	31994074
40	31994076
50	31994077

3-way butterfly valves KF electro-pneum., high-grade steel (1.4404)

> Please specify control voltage when ordering!
> Possible control voltage is **24V** and 230V **(special voltage upon request)**
> Body and internal parts 1.4404
> Single-acting, with spring reset (double-acting upon request)
> Can be used in high-vacuum area but not in the pressure range above 1 bar.
> Almost completely free passage in open position.
> Drive unit housing, aluminium
> All data that is not specified can be obtained from Manual valves
> The valve is suitable as a vacuum manifold
> Special nominal widths of the side connections available upon request
> The valve permits four switching statuses and can be used as a T and L variant

* Take sealing materials and connecting elements into consideration



NW DN	a [mm]	b [mm]	c [mm]	d [mm]	Weight [kg]	Com-pressed air [bar]	Closing time [ms]	With position indicator	With control valve	Article no.
25	130	55	190	145	2.2	4-8	2.7			417412
25	130	55	190	145	2.2	4-8	2.7	X		417422
25	130	55	190	145	2.4	4-8	2.7		X	417432
25	130	55	190	145	2.4	4-8	2.7	X	X	417442
40	150	65	210	165	3.58	4-8	2.7			417612
40	150	65	210	165	3.8	4-8	2.7	X		417622
40	150	65	210	165	4.0	4-8	2.7		X	417632
40	150	65	210	165	4.0	4-8	2.7	X	X	417642

dia. special nominal widths of the side connections available upon request

Gasket kit for drive shaft and valve plate

Nominal width DN	Article no.
25	31994174
40	31994176
50	31994177

KF ball valve, actuated manually and electro-pneumatically

Properties:

- single-acting pneumatic unit
- high conductance
- PTFE-sealed
- reliable function in all installation positions
- long service life and low-maintenance
- optical position display (with manual actuation)

Description:

The ball valves are shut-off valves with a ball as an active shut-off element, which is surrounded by two PTFE-sealed ball seats. The shifting shaft is sealed off by a Viton- or PTFE-sealed compression gland. The manually actuated ball valves are actuated by rotating the switching handle 180°. At the same time, the switching handle serves as a position display. The three-way ball valve has an L design with a 180° stop. The supply line 1 can be connected either with outlet 2 or 3. During switch-over, all outlets are separated from one another.

Pneumatic valves:

The pneumatic unit is single-acting. Upon request, it can also be supplied with a double-acting swivel drive. This means that the ball valve is de-energized and depressurised when closed. The ball valve is opened either directly via compressed air or controlled via a pilot valve that forwards the compressed air to the ball valve. The position indicator (optional) signals the open or closed position.

Area of application:

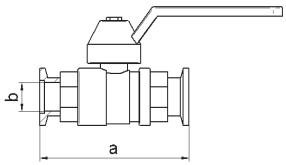
The ball valves can be used as shut-off valves with full bore in vacuum and low-pressure systems. They can be used in a pressure range from 10^{-6}mbar to 2.5 bar and can be installed fail-safe as required in compact systems. The electro-pneumatically actuated valves are suitable for automated vacuum systems (usually controlled via PLC).

Materials:

Housing: hot-pressed brass, nickel-plated 2.0401 (MS 58) or high-grade steel 1.4408
Ball: brass 2.0401 (MS 58) hard-chrome plated or high-grade steel 1.4408 / 1.4401
Ball sealer: PTFE
Stem seal: FKM or PTFE

2-way ball valve KF manual

> Handle used for position display open / closed
> Pressure range: 10^{-6}mbar to 2.5 bar
> Free passage in open position
> Sealing material FKM, PTFE
> Brass maintenance-free / high-grade steel 20000 cycles
* Take sealing materials and connecting elements into consideration



Brass 2.0401

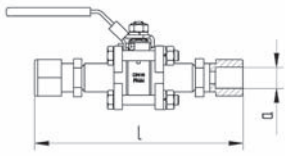
Nominal width DN	a [mm]	b [mm]	Leak-tightness [mbarl/s]	Pressure range	Service life	Medium temperature [°C]	Weight [kg]	Article no.
10	63	10	<1*10^{-6}	1*10^{-6} mbar to 2.5 bar	20000	-20 °C to 120 °C	0.18	4021
16	78	15	<1*10^{-6}	1*10^{-6} mbar to 2.5 bar	20000	-20 °C to 120 °C	0.26	4022
25	97	25	<1*10^{-6}	1*10^{-6} mbar to 2.5 bar	20000	-20 °C to 120 °C	0.58	4024
40	126	40	<1*10^{-6}	1*10^{-6} mbar to 2.5 bar	20000	-20 °C to 120 °C	1.22	4026
50	140	50	<1*10^{-6}	1*10^{-6} mbar to 2.5 bar	20000	-20 °C to 120 °C	2.0	4027

High-grade steel 1.4408

Nominal width DN	a [mm]	b [mm]	Leak-tightness [mbarl/s]	Pressure range	Service life	Medium temperature [°C]	Weight [kg]	Article no.
10	102	10	<1*10^{-6}	1*10^{-6} mbar to 2.5 bar	20000	-30 °C to 180 °C	0.28	4031
16	107	15	<1*10^{-6}	1*10^{-6} mbar to 2.5 bar	20000	-30 °C to 180 °C	0.38	4032
25	140	25	<1*10^{-6}	1*10^{-6} mbar to 2.5 bar	20000	-30 °C to 180 °C	1.04	4034
40	174	40	<1*10^{-6}	1*10^{-6} mbar to 2.5 bar	20000	-30 °C to 180 °C	2.3	4036
50	200	50	<1*10^{-6}	1*10^{-6} mbar to 2.5 bar	20000	-30 °C to 180 °C	3.8	4037

2-way ball valve with double compression fitting

> Handle used for position display open / closed
> Pressure range: 10^{-6}mbar to 2.5 bar
> Free passage in open position
> Sealing material FKM, PTFE
> Brass maintenance-free / high-grade steel 20000 cycles
* Take sealing materials and connecting elements into consideration

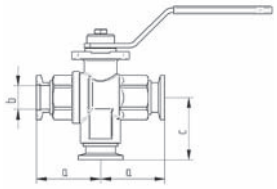


High-grade steel 1.4408 / 1.4404 Swagelok®-compatible

Nominal width DN	a [mm]	b [mm]	Leak-tightness [mbarl/s]	Pressure range	Service life	Medium temperature [°C]	Weight [kg]	Article no.
6	82	6/10	<1*10^{-6}	1*10^{-6} mbar to 2.5 bar	20000	-30 °C to 180 °C	260	4081
8	84	8/10	<1*10^{-6}	1*10^{-6} mbar to 2.5 bar	20000	-30 °C to 180 °C	270	4082
10	88	10	<1*10^{-6}	1*10^{-6} mbar to 2.5 bar	20000	-30 °C to 180 °C	300	4083
12	94	12/10	<1*10^{-6}	1*10^{-6} mbar to 2.5 bar	20000	-30 °C to 180 °C	320	4084
1/4″	82	1/4″/10	<1*10^{-6}	1*10^{-6} mbar to 2.5 bar	20000	-30 °C to 180 °C	260	4085
3/8″	87	3/8″/10	<1*10^{-6}	1*10^{-6} mbar to 2.5 bar	20000	-30 °C to 180 °C	300	4086
1/2″	94	1/2″/10	<1*10^{-6}	1*10^{-6} mbar to 2.5 bar	20000	-30 °C to 180 °C	320	4087

3-way ball valve KF manual

> Handle used for position display open / closed
> Pressure range: 10^{-6}mbar to 2.5 bar
> Sealing material FKM, PTFE
> Brass maintenance-free / high-grade steel 20000 cycles
> Brass without overlaps / high-grade steel with overlaps
* Take sealing materials and connecting elements into consideration

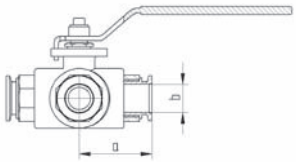


Brass 2.0401

NW DN	a [mm]	b [mm]	c [mm]	Leak-tightness [mbarl/s]	Pressure range	Service life	Medium temperature [°C]	Weight [kg]	Article no.
10	35	10	35	$<1*10^{-6}$	$1*10^{-6}$ mbar to 2.5 bar	20000	-20 °C to 120 °C	0.4	4041
16	43	15	42	$<1*10^{-6}$	$1*10^{-6}$ mbar to 2.5 bar	20000	-20 °C to 120 °C	0.52	4042
25	56	25	58	$<1*10^{-6}$	$1*10^{-6}$ mbar to 2.5 bar	20000	-20 °C to 120 °C	1.14	4044
40	70	40	76	$<1*10^{-6}$	$1*10^{-6}$ mbar to 2.5 bar	20000	-20 °C to 120 °C	1.9	4046
50	80	50	82	$<1*10^{-6}$	$1*10^{-6}$ mbar to 2.5 bar	20000	-20 °C to 120 °C	2.6	4047

3-way ball valve KF manual

> Handle used for position display open / closed
> Pressure range: 10^{-6}mbar to 2.5 bar
> Sealing material FKM, PTFE
> Brass maintenance-free / high-grade steel 20000 cycles
> Brass without overlaps / high-grade steel with overlaps
* Take sealing materials and connecting elements into consideration

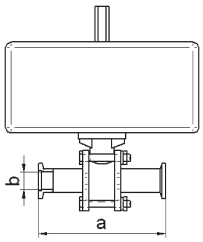


High-grade steel 1.4408

Nominal width DN	a [mm]	b [mm]	Leak-tightness [mbarl/s]	Pressure range	Service life	Medium temperature [°C]	Weight [kg]	Article no.
16	50.5	15	$<1*10^{-6}$	$1*10^{-6}$ mbar to 2.5 bar	20000	-30 °C to 180 °C	0.4	4062
25	65	24	$<1*10^{-6}$	$1*10^{-6}$ mbar to 2.5 bar	20000	-30 °C to 180 °C	0.52	4064
40	81	40	$<1*10^{-6}$	$1*10^{-6}$ mbar to 2.5 bar	20000	-30 °C to 180 °C	1.14	4066
50	97	50	$<1*10^{-6}$	$1*10^{-6}$ mbar to 2.5 bar	20000	-30 °C to 180 °C	1.9	4067

2-way ball valve KF electro-pneumatic

> Please specify control voltage when ordering!
> Possible control voltage is **24V** and 230V
(special voltage upon request)
> Pressure range: 10^{-4} mbar to 2.5 bar
> Free passage in open position.
> Sealing material FKM, PTFE
> Brass maintenance-free / high-grade steel 20000 cycles
* Take sealing materials and connecting elements into consideration

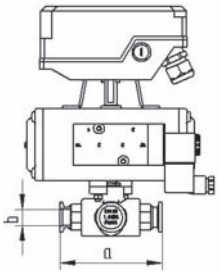


High-grade steel 1.4408

NW DN	a [mm]	b [mm]	Leak-tightness [mbarl/s]	Pressure range	Compr. air [bar]	Weight [kg]	With position indica-tor	With control valve	Version closed	Article no.
16	107	15	<1*10^{-4}	1*10^{-4} mbar to 2.5 bar	6-8	-			X	413212
16	107	15	<1*10^{-4}	1*10^{-4} mbar to 2.5 bar	6-8	-	X		X	413222
16	107	15	<1*10^{-4}	1*10^{-4} mbar to 2.5 bar	6-8	-		X	X	413232
16	107	15	<1*10^{-4}	1*10^{-4} mbar to 2.5 bar	6-8	-	X	X	X	413242
25	140	25	<1*10^{-4}	1*10^{-4} mbar to 2.5 bar	6-8	-			X	413412
25	140	25	<1*10^{-4}	1*10^{-4} mbar to 2.5 bar	6-8	-	X		X	413422
25	140	25	<1*10^{-4}	1*10^{-4} mbar to 2.5 bar	6-8	-		X	X	413432
25	140	25	<1*10^{-4}	1*10^{-4} mbar to 2.5 bar	6-8	-	X	X	X	413442
40	174	40	<1*10^{-4}	1*10^{-4} mbar to 2.5 bar	6-8	-			X	413612
40	174	40	<1*10^{-4}	1*10^{-4} mbar to 2.5 bar	6-8	-	X		X	413622
40	174	40	<1*10^{-4}	1*10^{-4} mbar to 2.5 bar	6-8	-		X	X	413632
40	174	40	<1*10^{-4}	1*10^{-4} mbar to 2.5 bar	6-8	-	X	X	X	413642
50	200	50	<1*10^{-4}	1*10^{-4} mbar to 2.5 bar	6-8	-			X	413712
50	200	50	<1*10^{-4}	1*10^{-4} mbar to 2.5 bar	6-8	-	X		X	413722
50	200	50	<1*10^{-4}	1*10^{-4} mbar to 2.5 bar	6-8	-		X	X	413732
50	200	50	<1*10^{-4}	1*10^{-4} mbar to 2.5 bar	6-8	-	X	X	X	413742

3-way ball valve KF electro-pneumatic

> Please specify control voltage when ordering!
> Possible control voltage is **24V** and 230V
(special voltage upon request)
> Pressure range: 10^{-4}mbar to 2.5 bar
> Sealing material FKM, PTFE
> Brass maintenance-free / high-grade steel 20000 cycles
* Take sealing materials and connecting elements into consideration



High-grade steel 1.4408

NW DN	a [mm]	b [mm]	Leak-tightness [mbarl/s]	Pressure range	Compr. air [bar]	Weight [kg]	With position indica-tor	With control valve	Version closed	Article no.
16	50.5	15	<1*10^{-4}	1*10^{-4} mbar to 2.5 bar	6-8	-			X	416212
16	50.5	15	<1*10^{-4}	1*10^{-4} mbar to 2.5 bar	6-8	-	X		X	416222
16	50.5	15	<1*10^{-4}	1*10^{-4} mbar to 2.5 bar	6-8	-		X	X	416232
16	50.5	15	<1*10^{-4}	1*10^{-4} mbar to 2.5 bar	6-8	-	X	X	X	416242
25	65	25	<1*10^{-4}	1*10^{-4} mbar to 2.5 bar	6-8	-			X	416412
25	65	25	<1*10^{-4}	1*10^{-4} mbar to 2.5 bar	6-8	-	X		X	416422
25	65	25	<1*10^{-4}	1*10^{-4} mbar to 2.5 bar	6-8	-		X	X	416432
25	65	25	<1*10^{-4}	1*10^{-4} mbar to 2.5 bar	6-8	-	X	X	X	416442
40	81	40	<1*10^{-4}	1*10^{-4} mbar to 2.5 bar	6-8	-			X	416612
40	81	40	<1*10^{-4}	1*10^{-4} mbar to 2.5 bar	6-8	-	X		X	416622
40	81	40	<1*10^{-4}	1*10^{-4} mbar to 2.5 bar	6-8	-		X	X	416632
40	81	40	<1*10^{-4}	1*10^{-4} mbar to 2.5 bar	6-8	-	X	X	X	416642
50	97	50	<1*10^{-4}	1*10^{-4} mbar to 2.5 bar	6-8	-			X	416712
50	97	50	<1*10^{-4}	1*10^{-4} mbar to 2.5 bar	6-8	-	X		X	416722
50	97	50	<1*10^{-4}	1*10^{-4} mbar to 2.5 bar	6-8	-		X	X	416732
50	97	50	<1*10^{-4}	1*10^{-4} mbar to 2.5 bar	6-8	-	X	X	X	416742

KF vent valve

Properties:

- FKM/FPM-sealed
- reliable function in all installation positions
- long service life and low-maintenance
- connection KF NW10

Actuation:

The valve is actuated by tightening or releasing the knurled cap.

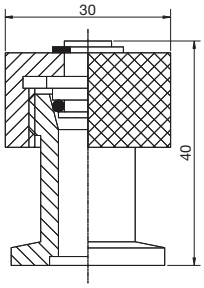
Area of application:

Venting of vacuum chambers and receivers

Materials:

Housing: brass, nickel-plated 2.0401 (MS 58) or high-grade steel 1.4301
Seal: FKM

> Actuation of knurled cap
> Temperature range: –30 °C to 110 °C brass
> Temperature range –30 °C to 160 °C high-grade steel
> Sealing material FKM/PTFE
* Take sealing materials and connecting elements into consideration



Brass 2.0401 (nickel-plated)

Nominal width DN	Height [mm]	Width [mm]	Leak-tightness [mbarl/s]	Pressure range	Venting medium	Weight [kg]	Article no.
10	40	30	$<5*10^{-9}$	$5*10^{-9}$ mbar to 2.5 bar	Ambient air	0.12	5021

High-grade steel 1.4301

Nominal width DN	Height [mm]	Width [mm]	Leak-tightness [mbarl/s]	Pressure range	Venting medium	Weight [kg]	Article no.
10	40	30	$<5*10^{-9}$	$5*10^{-9}$ mbar to 2.5 bar	Ambient air	0.13	5031

3-way valve KF, aluminium 3.1645

Properties:

- FKM-sealed
- reliable function in all installation positions
- long service life and low-maintenance
- optical position display (manual)
- freely selectable KF connections
- high leak rate

Description:

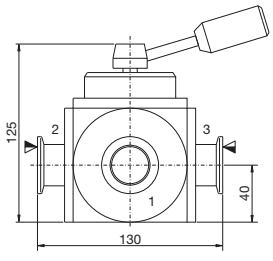
The novotek 3/3-way valves consist of an aluminium housing with three freely available KF connections. The 3/3-way valve has an L-design. The supply line 1 can be connected either with outlet 2 or 3. Outlet 2 cannot be connected with output 3. In neutral position, all connection are separated from one another. The valve position is displayed using the actuation lever.

Area of application:

The 3/3-way valve replaces two corner valves and its usage is therefore cost-saving. It is also suitable as a pre-vacuum bypass valve.

Materials:

Housing: aluminium 3.1645
Internal parts: brass 2.0401 (MS 58) hard-chrome plated
Seals: FKM



> Handle used for position display open / closed
> Sealing material FKM
* Take sealing materials and connecting elements into consideration

Nominal width DN	Conductivity value [l/s]	Leak-tightness [mbarl/s]	Pressure range	Service life	Operating temperature [°C]	Weight [kg]	Article no.
16	4	$<1*10^{-8}$	$1*10^{-8}$ mbar to 2.5 bar	10000	-30 °C to 120 °C	1.95	4052
25	8	$<1*10^{-8}$	$1*10^{-8}$ mbar to 2.5 bar	10000	-30 °C to 120 °C	1.95	4054
40	25	$<1*10^{-8}$	$1*10^{-8}$ mbar to 2.5 bar	10000	-30 °C to 120 °C	1.95	4056

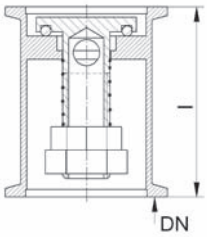
Pressure relief valve, spring preloaded KF / ISO-K, high-grade steel 1.4301

The spring-loaded pressure relief valve uses a spring to pull a plunger with an O-ring seal made of Viton against a sealing face. If an overpressure exists vis-à-vis the ambient pressure of the valve, this acts against the spring. The opening pressure can be adjusted via the spring preload. For this purpose, the nut on the plunger is turned in the direction of the spring or in the opposite direction. Note that the transition between vacuum-tight and a clear decrease of pressure is not abrupt. The specified leak rate < 1. 10^{-7}mbar•l/s is based on the case internal vacuum, external atmosphere. If the spring preload is too low, there is a risk of a permanent leakage because the contact force on the sealing ring is too low. In normal cases, the opening and closing pressure are not identical because the O-ring, depending on application conditions, adheres more or less to the sealing face and this additional force has to be applied by the overpressure. The flow rate depends on the pressure differential between the internal and external pressure. Following high flow volumes, which have led to considerable lifting of the plunger, the valve has to be checked and possibly cleaned with alcohol.

> Opens in case of overpressure
> Works in all installation positions
> Sealing material FKM
> The valve is not suitable for safety-critical applications.
> An exhaust gas hose can be connected on the exhaust gas side

* Take sealing materials and connecting elements into consideration

Art. no. 5046



Art. no. 5042

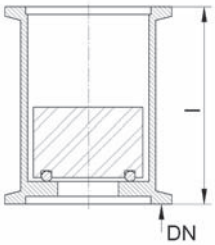
Art. no. 6051

Nominal width DN	l [mm]	Max. free cross-section in case of overpressure [mm²]	Leak-tightness [mbarl/s]	Adjustable opening pressure	Operating temperature [°C]	Article no.
16	35	12.6	$<1*10^{-7}$	100 mbar to 270 mbar	-0 °C to 120 °C	5042
40	65	113.1	$<1*10^{-7}$	70 mbar to 270 mbar	-0 °C to 120 °C	5046
63	100	491	$<1*10^{-7}$	70 mbar to 250 mbar	-0 °C to 120 °C	6051

KF overflow valve, high-grade steel 1.4301

The overflow valve works according to the suspended-body principle. If an overpressure exists vis-à-vis the ambient pressure of the valve, it will raise the suspended body. The opening pressure is set according to the size of the suspended body. Note that the transition between vacuum-tight and a clear decrease of pressure is not abrupt. The specified leak rate < 1. 10^{-5} mbar•l/s is based on the case internal vacuum and external atmosphere. If the pressure differential is too low, there is a risk of a permanent leakage because the contact force on the sealing ring is too low. In normal cases, the opening and closing pressure are not identical because the O-ring, depending on application conditions, adheres more or less to the sealing face and this additional force has to be applied by the overpressure.

> Opens in case of overpressure
> Can only be installed vertically **“installation position-dependent”**
> Sealing material FKM
> The valve is not suitable for safety-critical applications.
> An exhaust gas hose can be connected on the exhaust gas side
* Take sealing materials and connecting elements into consideration



Nominal width DN	l [mm]	Max. free cross-section in case of overpressure [mm²]	Leak-tightness [mbarl/s]	Opening pressure for suspended body [mbar]	Operating temperature [°C]	Article no.
40	65	113.1	$<1*10^{-5}$	20 mbar	-0 °C to 120 °C	5056-20
40	65	113.1	$<1*10^{-5}$	40 mbar	-0 °C to 120 °C	5056-40

Gate valves, manually and electro-pneumatically actuated

Properties

- high conductance
- very good leak rate
- slideway
- FKM-sealed valve seat
- reliable function in all installation positions
- long service life and low-maintenance

Description:

The gate valves marketed by novotek are products from the Swiss company VAT Vakuumventile. The closure mechanism is implemented with the patented VATLOCK system, which guarantees maximum reliability and minimal abrasion. In this case, we offer only a selection of the standard version with aluminium housing and high-grade steel housing. Upon request, we can also supply larger nominal widths as well as other values that are not listed here. The great advantage of gate valves is their relatively low weight and the flat design.

Pneumatic valves:

The pneumatic drive is double-acting. The valve is opened either directly via compressed air or controlled via an optionally integrated pilot valve that forwards the compressed air to the valve. The position indicator (optional) signals the open or closed position.

Area of application:

Gate valves are used when a very high conductance value or an optically free passage is required. The flat design permits further advantageous applications.

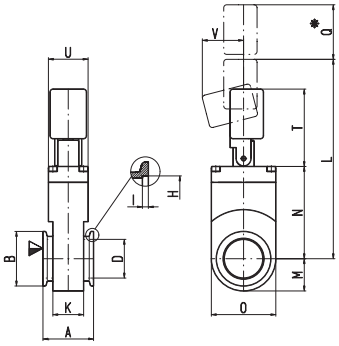
Materials:

Aluminium housing 3.3206 and 3.3547, high-grade steel housing 1.4301, mechanical system for aluminium gate valve: 1.4301. 1.4310. 1.4034, high-grade steel gate valve in addition 1.4404, FKM seals.

Mini vacuum gate valve KF, manually actuated, VAT® series 01.2, aluminium

> VAT gate valve with VATLOCK system, slideway and vulcanised plate seal
> Valve plate 1.4301
> Head and plate seal FKM
> Valve position visually detectable
> Temperature resistance of handle 80 °C

* Take sealing materials and connecting elements into consideration



Nominal width DN	A [mm]	O [mm]	M+N+T [mm]	M+L+Q [mm]	Conduc-tivity value [l/s]	Leak-tightness [mbarl/s]	Pressure range	Ser-vice life	Bake-out tempera-ture, housing [°C]	Weight [kg]	Article no.
16	40	30	91	140	10	$<1*10^{-9}$	$1*10^{-7}$ mbar to 1 bar	50000	100	0.4	3042
25	50	44	131	196	34	$<1*10^{-9}$	$1*10^{-7}$ mbar to 1 bar	50000	100	0.4	3044
40	51	65	210.5	295.5	140	$<1*10^{-9}$	$1*10^{7}$ mbar to 1 bar	50000	100	0.7	3046
50	55	75	238.5	342.5	260	$<1*10^{-9}$	$1*10^{-7}$ mbar to 1 bar	50000	100	0.7	3047

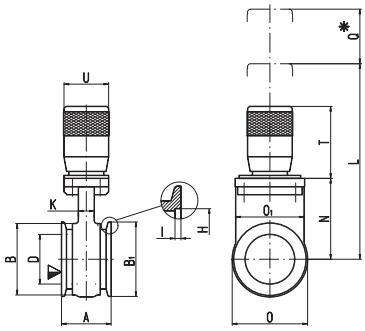
Gasket kit

Nominal width DN	Article no.
16	31993042
25	31993044
40	31993046
50	31993047

Mini UHV gate valve KF/CF, manually actuated VAT® series 01.0, high-grade steel

> VAT gate valves with Monovat system, lubricant-free and bellows sealed
> Valve housing and valve plate 1.4301. Flanges and bellows 1.4435
> Head seal, metal, plate seal FKM
> Valve position visually detectable
> Temperature resistance of handle 80 °C

* Take sealing materials and connecting elements into consideration



Nominal width DN	A [mm]	O [mm]	B/2+N +T [mm]	B/2+L +Q	Con-duc-tivity value [l/s]	Leak-tightness [mbarl/s]	Pressure range	Ser-vice life	Bake-out tempera-ture, housing [°C]	Weight [kg]	Article no.
KF 25	50	76	191	289	38	$<1*10^{-9}$	$1*10^{-10}$ mbar to 2 bar	50000	250	1.5	3054
KF 40	50	76	191	289	160	$<1*10^{-9}$	$1*10^{10}$ mbar to 2 bar	50000	250	1.5	3056
KF 50	50	76	193	289	160	$<1*10^{-9}$	$1*10^{-10}$ mbar to 2 bar	50000	250	1.5	3057
CF 40	35	76	191	289	220	<1*10-9	$1*10^{-10}$ mbar to 2 bar	50000	250	1.5	7042

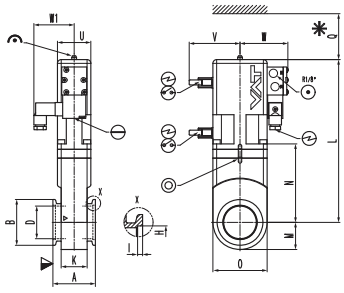
Gasket kit

Nominal width DN	Article no.
KF 25	31993054
KF 40	31993056
KF 50	31993057
CF 40	31997042

Mini vacuum gate valve KF, electro-pneumatic VAT® series 01.2, aluminium

> VAT gate valves with VATLOCK system
> Slideway and vulcanised plate seal
> Valve plate 1.4301
> Head and plate seal FKM
> Valve position visually detectable
> Control valve 24 VDC, 5.4W
> Position indicator ≤ 50V, 0.5A, (10W)
> Bake-out temperature, housing 100 °C
> Heating up and cooling speed ≤ 50 °C

* Take sealing materials and connecting elements into consideration



NW DN	A [mm]	O [mm]	M+L [mm]	M+L+ Q [mm]	Con- duc- tivity value [l/s]	Leak- tightness [mbarl/s]	Pressure range	Service life	Weight [kg]	With posi- tion indica- tor	With con- trol valve	Article no.
16	40	30	120	145	10	$<1*10^{-9}$	$1*10^{-7}$ mbar to 1 bar	50000	0.8			314214
16	40	30	120	145	10	$<1*10^{-9}$	$1*10^{-7}$ mbar to 1 bar	50000		X		314224
16	40	30	120	145	10	$<1*10^{-9}$	$1*10^{-7}$ mbar to 1 bar	50000		X	X	314244
25	50	44	158	193	34	$<1*10^{-9}$	$1*10^{-7}$ mbar to 1 bar	50000	1.1			314414
25	50	44	158	193	34	$<1*10^{-9}$	$1*10^{-7}$ mbar to 1 bar	50000		X		314424
25	50	44	158	193	34	$<1*10^{-9}$	$1*10^{-7}$ mbar to 1 bar	50000		X	X	314444
40	51	65	228.5	283.5	140	$<1*10^{-9}$	$1*10^{-7}$ mbar to 1 bar	50000	1.2			314614
40	51	65	228.5	283.5	140	$<1*10^{-9}$	$1*10^{-7}$ mbar to 1 bar	50000		X		314624
40	51	65	228.5	283.5	140	$<1*10^{-9}$	$1*10^{-7}$ mbar to 1 bar	50000		X	X	314644
50	55	75	257.5	322.5	260	$<1*10^{-9}$	$1*10^{-7}$ mbar to 1 bar	50000	1.3			314714
50	55	75	257.5	322.5	260	$<1*10^{-9}$	$1*10^{-7}$ mbar to 1 bar	50000		X		314724
50	55	75	257.5	322.5	260	$<1*10^{-9}$	$1*10^{-7}$ mbar to 1 bar	50000		X	X	314744

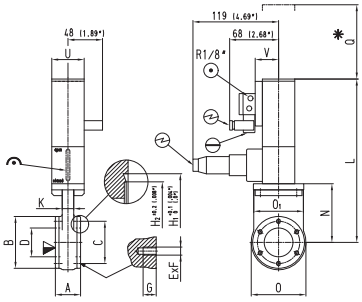
Gasket kit

Nominal width DN	Article no.
16	31993142
25	31993144
40	31993146
50	31993147

Mini UHV gate valve KF/CF, electro-pneumatic VAT® series 01.0, high-grade steel

> VAT gate valves with VATLOCK system
> Slideway and vulcanised plate seal
> Flanges and bellows 1.4435, plate 1.4301
> Head seal, metal, plate seal FKM
> Valve position visually detectable
> Control valve 24 VDC, 5.4W (with spring reset 9W)
> Position indicator ≤ 50V ≤3A, ≤ 250V ≤5A
> Bake-out temperature, housing 250 °C
> Heating up and cooling speed ≤ 50 °C

* Take sealing materials and connecting elements into consideration



NW DN	A [mm]	O [mm]	B/2+ L [mm]	B/2+ L+Q [mm]	Con-duc-tivity value [l/s]	Leak-tightness [mbarl/s]	Pressure range	Ser-vice life	Weight [kg]	With posi-tion indica-tor	With control valve	Article no.
25	50	76	266	321	38	$<1*10^{-9}$	$1*10^{-10}$ mbar to 2 bar	50000	1.8			315414
25	50	76	266	321	38	$<1*10^{-9}$	$1*10^{-10}$ mbar to 2 bar	50000		X		315424
25	50	76	266	321	38	$<1*10^{-9}$	$1*10^{-10}$ mbar to 2 bar	50000		X	X	315444
40	50	76	266	321	160	$<1*10^{-9}$	$1*10^{-10}$ mbar to 2 bar	50000	1.8			315614
40	50	76	266	321	160	$<1*10^{-9}$	$1*10^{-10}$ mbar to 2 bar	50000		X		315624
40	50	76	266	321	160	$<1*10^{-9}$	$1*10^{-10}$ mbar to 2 bar	50000		X	X	315644
50	50	76	266	321	160	$<1*10^{-9}$	$1*10^{-10}$ mbar to 2 bar	50000	1.8			315714
50	50	76	266	321	160	$<1*10^{-9}$	$1*10^{-10}$ mbar to 2 bar	50000		X		315724
50	50	76	266	321	160	$<1*10^{-9}$	$1*10^{-10}$ mbar to 2 bar	50000		X	X	315744
CF 40	35	76	266	321	160	$<1*10^{-9}$	$1*10^{-10}$ mbar to 2 bar	50000	1.8			714214
CF 40	35	76	266	321	160	$<1*10^{-9}$	$1*10^{-10}$ mbar to 2 bar	50000		X		714224
CF 40	35	76	266	321	160	$<1*10^{-9}$	$1*10^{-10}$ mbar to 2 bar	50000		X	X	714244

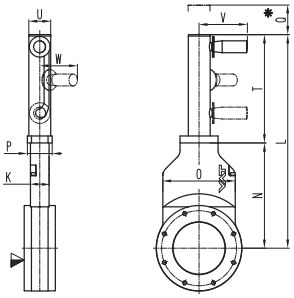
Gasket kit

Nominal width DN	Article no.
16	31993154
25	31993156
40	31993157
50	31997142

HV gate valve ISO-F, manually actuated VAT® series 12, aluminium

> VAT gate valve with VATLOCK system, **with slideway**
> Valve housing and valve plate made of 1.4301
> Head and plate seal FKM
> Valve position visually detectable
> Temperature resistance of handle 80 °C

* Take sealing materials and connecting elements into consideration



Nominal width DN	A [mm]	O1 [mm]	O1/2 +L [mm]	O1/2 +L+Q [mm]	Con-duc-tivity value [l/s]	Leak-tightness [mbarl/s]	Pressure range	Ser-vice life	Bake-out tempera-ture, housing [°C]	Weight [kg]	Article no.
63	60	131	395	420	550	$<1*10^{-9}$	$1*10^{-7}$ mbar bis 1.6 bar	200000	120	3.0	8042
100	60	166	496	521	2000	$<1*10^{-9}$	$1*10^{-7}$ mbar to 1 bar	200000	120	4.5	8044
160	70	237	665.5	725.5	6000	$<1*10^{-9}$	$1*10^{7}$ mbar to 1 bar	100000	120	9.0	8046

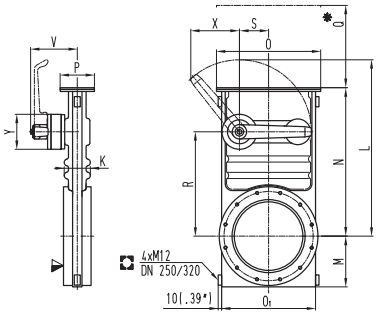
Gasket kit

Nominal width DN	Article no.
63	31998042
100	31998044
160	31998046

HV gate valve ISO-F, manually actuated VAT® series 14, high-quality steel

> **With hand lever**
> VAT gate valves with VATLOCK system
> Valve housing and valve plate made of 1.4301
> Head seal and plate seal FKM
> Valve position visually detectable
> Temperature resistance of handle 80 °C
> *Q=required removal height

* Take sealing materials and connecting elements into consideration



Nominal width DN	A [mm]	B [mm]	M +L [mm]	M+N +Q* [mm]	Con-duc-tivity value [l/s]	Leak-tightness [mbarl/s]	Pressure range	Service life	Bake-out tempera-ture, housing [°C]	Weight [kg]	Arti-cle no.
63	70	136	349	464	440	$<1*10^{-9}$	$1*10^{-8}$ mbar to 2 bar	200000	150	8	8072
100	70	176	408	583	1700	$<1*10^{-9}$	$1*10^{-8}$ mbar to 2 bar	200000	150	13	8074
160	80	225	578	785	5000	$<1*10^{-9}$	$1*10^{-8}$ mbar to 2 bar	200000	150	24	8076
200	80	288	663	939	12000	$<1*10^{-9}$	$1*10^{-8}$ mbar to 2 bar	200000	150	30	8078
250	100	350	994	1197	22000	$<1*10^{-9}$	$1*10^{-8}$ mbar to 1.2 bar	200000	150	58	8079

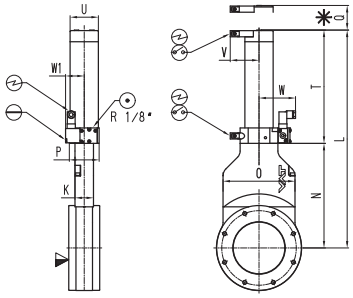
Gasket kit (plate seal)

Nominal width DN	Article no.
63	31998072
100	31998074
160	31998076
200	31998078
250	31998079

HV gate valve ISO-F, electro-pneumatic VAT® series 12, aluminium 3.3547

> VAT gate valves with VATLOCK system, slideway
> Valve plate 1.4301
> Head and plate seal FKM
> Valve position visually detectable
> Control valve 24 VDC, 5.4W
> Position indicator ≤ 50V ≤1.2A, ≤ 250V ≤2A
> Bake-out temperature, housing 120 °C
> Heating up and cooling speed ≤ 50 °C
> *Q=required removal height

* Take sealing materials and connecting elements into consideration



NW DN	A [mm]	O1 [mm]	O1/2 +L [mm]	O1/2 +L+Q [mm]	Con-duc-tivity value [l/s]	Leak-tightness [mbarl/s]	Pressure range	Ser-vice life	Weight [kg]	With posi-tion indica-tor	With con-trol valve	Article no.
63	60	131	407	432	550	<1*10^{-9}	1*10^{-7} mbar to 1.6 bar	200000	3.0			814214
63	60	131	407	432	550	<1*10^{-9}	1*10^{-7} mbar to 1.6 bar	200000		X		814224
63	60	131	407	432	550	<1*10^{-9}	1*10^{-7} mbar to 1.6 bar	200000		X	X	814244
100	60	166	508	533	2000	<1*10^{-9}	1*10^{-7} mbar to 1.6 bar	200000	4.5			814414
100	60	166	508	533	2000	<1*10^{-9}	1*10^{-7} mbar to 1.6 bar	200000		X		814424
100	60	166	508	533	2000	<1*10^{-9}	1*10^{-7} mbar to 1.6 bar	200000		X	X	814444
160	70	237	665.5	725.5	6000	<1*10^{-9}	1*10^{-7} mbar to 1.6 bar	100000	9.0			814614
160	70	237	665.5	725.5	6000	<1*10^{-9}	1*10^{-7} mbar to 1.6 bar	100000		X		814624
160	70	237	665.5	725.5	6000	<1*10^{-9}	1*10^{-7} mbar to 1.6 bar	100000		X	X	814644
200	80	290	833	913	12000	<1*10^{-9}	1*10^{-7} mbar to 1.6 bar	100000	18.0			814814
200	80	290	833	913	12000	<1*10^{-9}	1*10^{-7} mbar to 1.6 bar	100000		X		814824
200	80	290	833	913	12000	<1*10^{-9}	1*10^{-7} mbar to 1.6 bar	100000		X	X	814844
250	70	352	1019	1119	22000	<1*10^{-9}	1*10^{-7} mbar to 1.2 bar	100000	25.0			814914
250	55	352	1019	1119	22000	<1*10^{-9}	1*10^{-7} mbar to 1.2 bar	100000		X		814924
250	55	352	1019	1119	22000	<1*10^{-9}	1*10^{-7} mbar to 1.2 bar	100000		X	X	814944

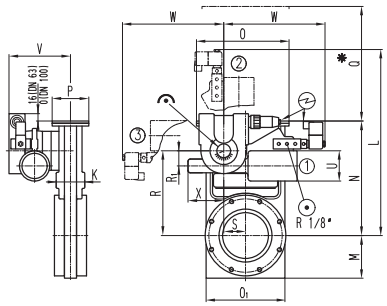
Gasket kit

Nominal width DN	Article no.
63	31998142
100	31998144
160	31998146
200	31998148
250	31998149

HV gate valve ISO-F, electro-pneumatic VAT® series 14, high-quality steel

> VAT gate valves with VATLOCK system
> Valve plate and housing 1.4301
> Head and plate seal FKM
> Valve position visually detectable
> Control valve 24 VDC, 5.4W
> Position indicator ≤ 50V ≤1.2A, ≤ 250V ≤2A
> Bake-out temperature, housing 120 °C
> Heating up and cooling speed ≤ 50 °C
> *Q=required removal height

* Take sealing materials and connecting elements into consideration



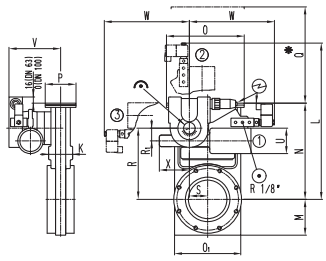
NW DN	A [mm]	O1 [mm]	O1/2 +L [mm]	O1/2 +L+Q [mm]	Con-duc-tivity value [l/s]	Leak-tightness [mbarl/s]	Pressure range	Ser-vice life	Weight [kg]	With posi-tion indi-cator	With con-trol valve	Article no.
63	70	134	407	432	550	<1*10^{-9}	1*10^{-8} mbar to 2.0 bar	200000	10.0			817214
63	70	134	407	432	550	<1*10^{-9}	1*10^{-8} mbar to 2.0 bar	200000		X		817224
63	70	134	407	432	550	<1*10^{-9}	1*10^{-8} mbar to 2.0 bar	200000			X	817234
63	70	134	407	432	550	<1*10^{-9}	1*10^{-8} mbar to 2.0 bar	200000	15.0	X	X	817244
100	70	172	508	533	2000	<1*10^{-9}	1*10^{-8} mbar to 2.0 bar	200000				817414
100	70	172	508	533	2000	<1*10^{-9}	1*10^{-8} mbar to 2.0 bar	200000		X		817424
100	70	172	508	533	2000	<1*10^{-9}	1*10^{-8} mbar to 2.0 bar	200000	27.0		X	817434
100	70	172	508	533	2000	<1*10^{-9}	1*10^{-8} mbar to 2.0 bar	200000		X	X	817444
160	70	222	665.5	725.5	6000	<1*10^{-9}	1*10^{-8} mbar to 2.0 bar	200000				817614
160	70	222	665.5	725.5	6000	<1*10^{-9}	1*10^{-8} mbar to 2.0 bar	200000	33.0	X		817624
160	70	222	665.5	725.5	6000	<1*10^{-9}	1*10^{-8} mbar to 2.0 bar	200000			X	817634
160	70	222	665.5	725.5	6000	<1*10^{-9}	1*10^{-8} mbar to 2.0 bar	200000		X	X	817644
200	80	274	833	913	12000	<1*10^{-9}	1*10^{-8} mbar to 2.0 bar	200000	33.00			817814
200	80	274	833	913	12000	<1*10^{-9}	1*10^{-8} mbar to 2.0 bar	200000		X		817824
200	80	274	833	913	12000	<1*10^{-9}	1*10^{-8} mbar to 2.0 bar	200000			X	817834
200	80	274	833	913	12000	<1*10^{-9}	1*10^{-8} mbar to 2.0 bar	200000		X	X	817844
250	100	356	1019	1119	22000	<1*10^{-9}	1*10^{-8} mbar to 1.2 bar	200000	62.0			817914
250	100	356	1019	1119	22000	<1*10^{-9}	1*10^{-8} mbar to 1.2 bar	200000		X		817924
250	100	356	1019	1119	22000	<1*10^{-9}	1*10^{-8} mbar to 1.2 bar	200000			X	817934
250	100	356	1019	1119	22000	<1*10^{-9}	1*10^{-8} mbar to 1.2 bar	200000		X	X	817944

Gasket kit (plate seal)

Nominal width DN	Article no.
63	31998172
100	31998174
160	31998176
200	31998178
250	31998179

UHV gate valve CF with manual drive VAT® series 10, high-grade steel 1.4301

> VAT gate valves with VATLOCK system
> Valve housing and valve plate made of 1.4301
> Head seal, metal, plate seal FKM, vulcanised
> *Q=required removal height
* Take sealing materials and connecting elements into consideration



Nominal width DN	A [mm]	B [mm]	B/2+ L [mm]	B/2+ L+Q* [mm]	Conductivity value [l/s]	Leak-tightness [mbarl/s]	Pressure range	Service life	Bake-out temperature, housing [°C]	Weight [kg]	Article no.
63	70	113.5	465	645	600	$<1*10^{-9}$	$1*10^{-10}$ mbar to 1.6 bar	50000	250	9	7043
100	70	151.6	538	758	1700	$<1*10^{-9}$	$1*10^{-10}$ mbar to 1.6 bar	50000	250	12	7044
160	70	202.4	653	943	6000	$<1*10^{-9}$	$1*10^{-10}$ mbar to 1.6 bar	50000	250	18	7045
200	80	253.2	787	1137	12000	$<1*10^{-9}$	$1*10^{-10}$ mbar to 1.6 bar	50000	250	25	7046
250	100	350	1016	1456	26000	$<1*10^{-9}$	$1*10^{-10}$ mbar to 1.2 bar	50000	250	52	7047

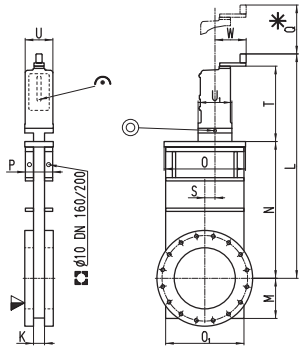
Gasket kit

Nominal width DN	Article no.
63	31997043
100	31997044
160	31997045
200	31997046
250	31997047

UHV gate valve CF electro-pneumatic VAT® series 10, high-grade steel 1.4301

> VAT gate valves with VATLOCK system via handwheel
> Valve plate and housing 1.4301
> Head, metal, and plate seal FKM vulcanised
> Control valve 24 VDC, 5.4W
> Position indicator ≤ 50V ≤1.2A, ≤ 250V ≤2A
> Bake-out temperature, housing 250 °C
> Heating up and cooling speed ≤ 50 °C
> *Q=required removal height

* Take sealing materials and connecting elements into consideration



NW DN	A [mm]	O1 [mm]	O1/2 +L [mm]	O1/2 +L+Q [mm]	Conductivity value [l/s]	Leak-tightness [mbarl/s]	Pressure range	Service life	Weight [kg]	With position indicator	With control valve	Article no.
63	70	113.5	402.5	582.5	600	$<1*10^{-9}$	$1*10^{-10}$ mbar to 1.6 bar	50000	9.0			707314
63	70	113.5	402.5	582.5	600	$<1*10^{-9}$	$1*10^{-10}$ mbar to 1.6 bar	50000		X		707324
63	70	113.5	402.5	582.5	600	$<1*10^{-9}$	$1*10^{-10}$ mbar to 1.6 bar	50000		X	X	707344
100	70	151.6	494	714	1700	$<1*10^{-9}$	$1*10^{-8}$ mbar to 2.0 bar	50000	12.0			707414
100	70	151.6	494	714	1700	$<1*10^{-9}$	$1*10^{-8}$ mbar to 2.0 bar	50000		X		707424
100	70	151.6	494	714	1700	$<1*10^{-9}$	$1*10^{-8}$ mbar to 2.0 bar	50000		X	X	707444
160	70	202.4	624	914	6000	$<1*10^{-9}$	$1*10^{-8}$ mbar to 2.0 bar	50000	18.0			707514
160	70	202.4	624	914	6000	$<1*10^{-9}$	$1*10^{-8}$ mbar to 2.0 bar	50000		X		707524
160	70	202.4	624	914	6000	$<1*10^{-9}$	$1*10^{-8}$ mbar to 2.0 bar	50000		X	X	707544
200	80	253.2	756.5	1106	12000	$<1*10^{-9}$	$1*10^{-10}$ mbar to 1.6 bar	50000	24.0			707614
200	80	253.2	756.5	1106	12000	$<1*10^{-9}$	$1*10^{-10}$ mbar to 1.6 bar	50000		X		707624
200	80	253.2	756.5	1106	12000	$<1*10^{-9}$	$1*10^{-10}$ mbar to 1.6 bar	50000		X	X	707644
250	100	350	975	1425	26000	$<1*10^{-9}$	$1*10^{-10}$ mbar to 1.2 bar	50000	42.0			707714
250	100	350	975	1425	26000	$<1*10^{-9}$	$1*10^{-10}$ mbar to 1.2 bar	50000		X		707724
250	100	350	975	1425	26000	$<1*10^{-9}$	$1*10^{-10}$ mbar to 1.2 bar	50000		X	X	707744

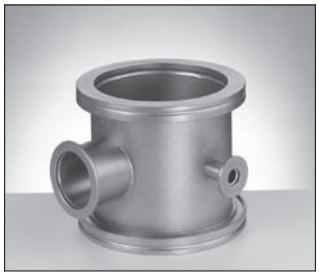
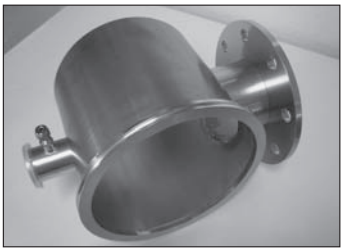
Gasket kit

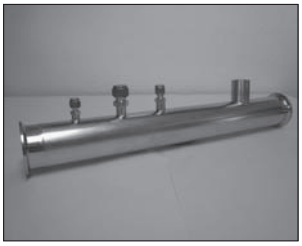
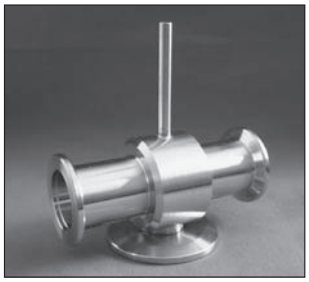
Nominal width DN	Article no.
63	31997073
100	31997074
160	31997075
200	31997076
250	31997077

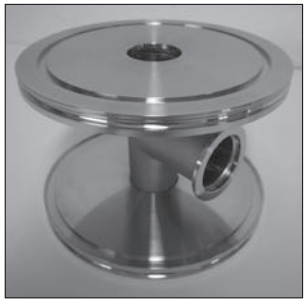
Special components / special products

Special components made from standard components

The novotek special component made from KF – ISO-K and CF standard components are produced mainly according to drawings, diagrams or descriptions. In accordance with high-vacuum technology requirements, they are manufactured using WIG manual welding technology, if necessary, using a microscope, laser welding or orbital welding. Our customers decide on the surface characteristics, such as unplated, glass bead blasted, electropolished or vacuum-annealed and on the leak rate requirements. In this case, we are able to produce standard components up to $1x10^{-9}$mbarl/s and special components up to $1x10^{-10}$mbarl/s. Furthermore, we have a very wide range of extremely varied materials and have the option of cleaning the components in a special ultrasonic cleaning procedure suitable for high vacuum.

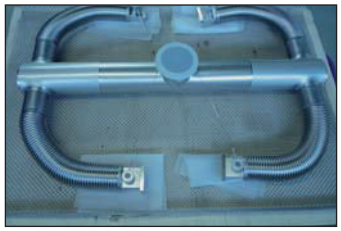



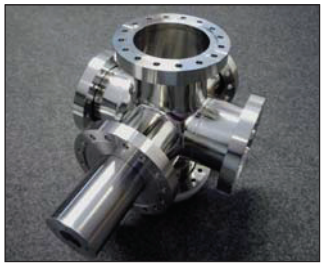



Special components according to customer drawing

A small selection of special components according to customer requirements serves to demonstrate our options for a very wide variety of production processes. Since the start of 2011 we have been using our own CNC-controlled lathe and mill cutters, which allow us to offer the shortest possible delivery times of a few days and hours.





Chambers and receivers for high-vacuum applications

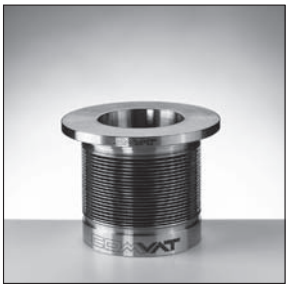
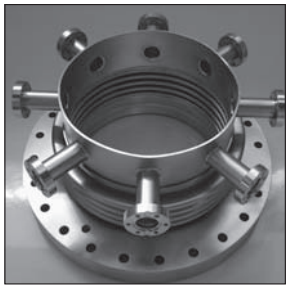
The novotek chambers are used in the partial pressure and high-vacuum areas. They are manufactured from a very wide variety of materials according to customer requirements and are installed in research and industrial plants. Our Production department works to very high quality standards at all times. A final leak test record documents the leak-tightness of our chambers.

Metal hoses, metal bellows and diaphragm bellows as special components

The novotek hoses and bellows are manufactured in different designs. We shall be glad to help you in the design phase of the bellows. The associated bellows request for quotation follows directly.









novotek
VAKUUMTECHNIK

Checklist for bellows requests for quotation

Fax: 07159/80569-11
E-mail: info@novotek.de

Customer: _____ Telephone: _____
Address: _____ Fax: _____
_____ E-mail: _____
_____ Internet: _____
Contact person: _____ Date: _____
_____ Project: _____
_____

Underlined features are mandatory for all bellows designs.

Diaphragm bellows data ( ) = standard

Material	❑ AISI 316L	❑ AM 350	❑ Others
Inside diameter	ID mm	❑ exact or	❑ min.
Outside diameter	OD mm	❑ exact or	❑ max.
Operating stroke	axial mm	lateral mm	angular °
or stroke position	from Lc mm With a combined or angular stroke, a diagram is very helpful	to Le mm	frequency Hz
Permissible forces	axial N	lateral N	angular °
Service life	❑ Nz (10'000) cycles	❑ Nz > cycles	
Temperature	Operation °C (20 °C)	Baking out °C (80 °C)	
Operating pressure	inside bar (0)	outside bar (l)	
Installation pos.	❑ any	❑ vertical	❑ horizontal
Max. installation dimensions (length, diameter) if known and/or required		length mm	dia. mm

End pieces

❑ Provided by customer

Please note: connection to bellows in acc. with our seal-weld lip standard
Material for bellows end pieces: 1.4435 ESR or forged.

❑ No end pieces
❑ With end pieces

Standard:
❑ End piece with pipe ❑ End piece from DN 63 without pipe
❑ CF flange ❑ x fixed ❑ x rotating
❑ ISO-KF
❑ ISO-K

Special:
❑ End piece according to drawing
❑ CF flange: ❑ with thread ❑ in 1.4429/316 LN ❑ according to drawing
❑ ISO-F
❑ ISO-KF L = _____ ❑ according to drawing

❑ Align end pieces to one another: ❑ ± 5° (by eye) ❑ ± _____ °

Certificates

❑ Helium Leak Test ❑ Material Certificate for Strip Material ❑ Material Certificate for End Piece Pipe Material
❑ Measurement records (only with drawing)

Unit count / quantity units _____
Comment / drawing (insert)

Inspection glasses and glass elements

Components made of borosilicate

Properties:

- transmission range 0.4 – 2.0 µm
- vacuum-tight > $1x10^{-11}$ mbarl/s
- light weight
- max. temperature 350 °C

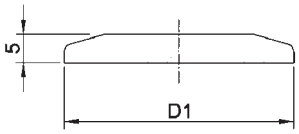
Area of application:

Many technical vacuum applications require that the process room within the vacuum plant is optically observed. Depending on the process, the requirements range from simple visual observation for position tasks to high-precision optical measurements.

Following selection criteria may be helpful:

- Wave length, surface characteristics (scratches, flatness, parallelism, heat treatment, coating, anti-reflection coating), pressure range, radiation level, media characteristics, e.g. aggressive gases, temperature range.

KF glass flange (blind flange)



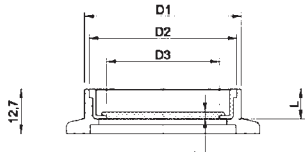
> Pressure range: 10^{-7} mbar to 1.5 bar*
> Temperature range: –15 °C to 150 °C*
> Chemically resistant
> Low thermal expansion and temperature-resistant
> Heating up and cooling with max. 300 °C/hour
> Standard inspection glass for visible area
> Limited transmission in UV range (0.4 µm – 2.0 µm)

* Take sealing materials and connecting elements into consideration

Borosilicate

Nominal width DN	D1	Article no.
16	30	2112
25	40	2114
40	55	2116
50	75	2117

KF inspection glass



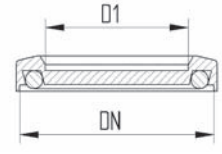
> Pressure range: 10^{-9} mbar to 1.5 bar*
> Temperature range: –100 °C to 300 °C*
> Chemically resistant
> Low thermal expansion and temperature-resistant
> Heating up and cooling with max. 300 °C/hour
> Standard inspection glass for visible area
> Limited transmission in UV range (0.4 µm – 2.0 µm)
> Flange made of high-grade steel with integrated FPM O-ring

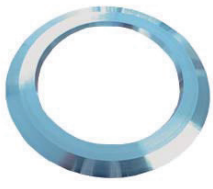
* Take sealing materials and connecting elements into consideration

Borosilicate / high-grade steel 1.4301

Nominal width DN	D1 [mm]	D2 [mm]	D3 [mm]	T [mm]	L [mm]	Article no.
16	22	19	16	1.6	8.5	2122
25	25.4	19	16	1.6	8.5	2124
40	44.5	42	32	3	8.5	2126
50	50.5	42	32	3	7	2127

KF inspection glass, aluminium





> Pressure range: 10^{-9} mbar to 3 bar*
> Temperature range: –15 °C to 150 °C*
> Chemically resistant
> Low thermal expansion and temperature-resistant
> Heating up and cooling with max. 300 °C/hour
> Standard inspection glass for visible area
> Limited transmission in UV range (0.4 µm – 2.0 µm)
> Flange made of aluminium with integrated FPM O-ring

* Take sealing materials and connecting elements into consideration

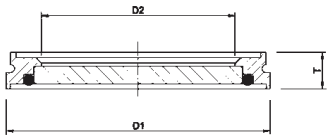
Borosilicate / aluminium (3.2315)

Nominal width DN	D [mm]	D1 [mm]	h [mm]	Article no.
25	40	26	10	2134
40	57	41	10	2136
50	77	52	10	2137

ISO-K inspection glass

> Pressure range: 10^{-9}mbar to 1.5 bar*
> Temperature range: –15 °C to 150 °C*
> Chemically resistant
> Low thermal expansion and temperature-resistant
> Heating up and cooling with max. 300 °C/hour
(from NW200 max. 100 °C/h)
> Standard inspection glass for visible area
> Limited transmission in UV range (0.4 µm – 2.0 µm)
> Flange made of high-grade steel 1.4301 with integrated FPM O-ring
> Assembly without additional seal.
(claw are not suitable)

* Take sealing materials and connecting elements into consideration



Borosilicate / high-grade steel 1.4301

Nominal width DN	D1 [mm]	D2 [mm]	T [mm]	Article no.
63	98	72	13.5	6531
100	133	104	15.5	6532
160	183	153	17.2	6533
200	-	-	-	6534
250	-	-	-	6535

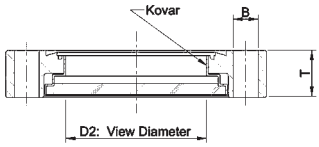
Borosilicate / aluminium (3.2315)

Nominal width DN	D1 [mm]	D2 [mm]	T [mm]	Article no.
63	98	72	13.5	6531A
100	133	104	15.5	6532A
160	183	153	17.2	6533A
200	-	-	-	6534A
250	-	-	-	6535A

CF inspection glass

> Pressure range: 10^{-11}mbar to 1.0 bar*
> Temperature range: –15 °C to 350 °C*
> Chemically resistant
> Low thermal expansion and temperature-resistant
> Heating up and cooling with max. 180 °C/hour
> Standard inspection glass for visible area
> Limited transmission in UV range (0.4 µm – 2.0 µm)
> Flange made of high-grade steel 1.4301
> Assembly only with annealed copper seals or FKM seals

* Take sealing materials and connecting elements into consideration



Borosilicate / high-grade steel 1.4301

Nominal width DN	D2 [mm]	B [mm]	T [mm]	Article no.
16	16	4.4	12	7411
40	38	6.7	12.7	7412
63	63	8.4	17.5	7413
100	90	8.4	19.9	7414
160	135	8.4	22.3	7415
200	136.7	8.4	24.6	7416

Accessories

High-vacuum grease Dow Corning®

> Temperature range: –40 °C to 150 °C*
> Vapour pressure: at 60 °C = 1.3x10^{-7}mbar, at 110 °C = 2x10^{-5}mbar, at 150 °C = 1x10^{-3}mbar
> Colour: transparent
> Good lubrication and sealing behaviour, tends to creep
> Not suitable for coating plants because even an extremely small amount of grease is sufficient to prevent paint from adhering.

	Article no.
High vacuum grease 50g	7009

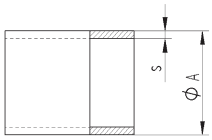
Thread lubricant Molykote®

> Suitable for high-grade steel screw connections, in particular, with heated flanges
> Prevents seizing of screws during release and when creating a screw connection
> Very favourable friction coefficient
> Operation temperature –30 °C to 650 °C

	Article no.
Thread lubricant for screw sets 100g	7010

Stock list, pipes

> Pressure range: 10^{-9}mbar to 2.5 bar
> Temperature range 1.4301: –196 °C to 300 °C*
> Surface unplated
> Price quotation per metre, maximum length 6 m
> Tolerances according to EN ISO 1127 for high-grade steel

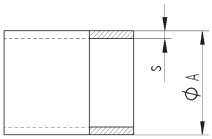


High-grade steel 1.4301

Material	dia.A [mm]	Wall thickness s [mm]	Article no.
1.4301	6	1	9001
1.4301	8	1	9002
1.4301	10	1	9003
1.4301	12	1	9004
1.4301	12	2	9005
1.4301	18	1	9006
1.4301	18	1.5	9007
1.4301	19	1.5	9008
1.4301	20	2	90081
1.4301	25.4	1.63	9009
1.4301	28	1.5	9010
1.4301	38	1.5	9011
1.4301	40	1.5	9012
1.4301	42.4	2	9013
1.4301	44.5	2	9014
1.4301	48.3	2	9015
1.4301	52	1.5	9016
1.4301	60.3	2	90161
1.4301	70	2	9017
1.4301	76	3	9018
1.4301	88.9	3	9019
1.4301	104	2	9020
1.4301	108	3	9021
1.4301	154	2	9022
1.4301	159	3	9023
1.4301	219	3	9025
1.4301	273	3	9027

Stock list, pipes

> Pressure range: 10^{-9}mbar to 2.5 bar
> Temperature range 3.2315. 1.0037: –196 °C to 300 °C*
> Temperature range 1.4404. 1.4541: –196 °C to 350 °C*
> Surface unplated
> Price quotation per metre, maximum length 6 m
> Tolerances according to EN ISO 1127 for high-grade steel
> Tolerances according to DIN EN 755-1/-2/-9 for aluminium
> Tolerances according to EN 10217-1 and EN 10219-1 for steel



High-grade steel 1.4404/1.4541

Material	dia.A [mm]	Wall thickness s [mm]	Article no.
1.4404	6	1	90014
1.4404	6.35	0.89	900114
1.4404	8	1	90024
1.4404	10	1	90034
1.4404	12	1	90044
1.4404	18	1	90064
1.4404	18	1.5	90074
1.4404	19	1.5	90084
1.4404	20	2	900814
1.4404	25.4	1.65	900824
1.4404	28	1.5	90104
1.4404	38	1.5	90114
1.4404	40	1.5	90124
1.4404	42.4	2	90134
1.4404	44.5	2	90144
1.4404	48.3	2	90154
1.4404	52	1.5	90164
1.4404	54	2	901614
1.4404	70	2	90174
1.4404	76	3	90184
1.4404	88.9	3	90194
1.4404	101.6	2.11	901914
1.4404	104	2	90204
1.4404	108	3	90214
1.4404	154	2	90224
1.4571	104	2	90205
1.4571	159	3	90235
1.4404	204	2	90244
1.4404	219	3	90254
1.4404	254	2	90264
1.4404	273	3	90274

Aluminium

3.2315	76	3	9040
3.2315	108	3	9041
3.2315	160	4	9042

Steel

1.0037	76	3	9050
1.0037	108	3	9051
1.0037	159	3	9052